ELEARNING INTEGRATORS' NARRATIVES EXPRESSING PROFESSIONAL IDENTITY AND EXPLAINING PATTERNS OF PRACTICE WITH ICT

A NARRATIVE INQUIRY INTO THE BELIEFS AND PRACTICES OF FOUR TEACHERS WHO ASSIST OTHER TEACHERS TO INCORPORATE INFORMATION AND COMMUNICATION TECHNOLOGIES INTO THEIR CLASSROOM PRACTICES

A Thesis submitted by

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Abstract

This research explored the complexities surrounding encouragement of the use of Information Technology (IT) in Educational settings by classroom practitioners. The Melbourne Declaration, made by all Australian Education ministers in 2008 states that successful learners "are creative and productive users of technology, especially ICT, as a foundation for success in all learning areas"(MCEECDYA, 2008, p. 8). Early adopters of the technology encouraged their peers to embrace these new technologies with the enticing promise that it would motivate their students and make their job easier. These early adopters often became teacher leaders, given the role of eLearning Coordinator or eIntegrators (eLI's), responsible for helping staff to integrate ICT into their classroom practices. The study investigated this role and the patterns of practice that could be identified during the investigation.

This study investigated four eLI's seeking to discover the influences on their professional duties and how their teacher identities shaped their effectiveness and influenced the decisions that they made. A Narrative Inquiry approach was used to listen to and retell their stories. This was grounded in the theories of Clandinin and Connelly (1994), borrowing particularly from their work on the commonplaces of time, place and personal-social dimensions to help focus the study and provide a lens for analysis. The methodology included in-depth interviews, observations, emails, and Skype calls to collect the data which would be used to analyse the practices and beliefs of the participants over a period of 18 months. The data analysis was done through the lens of place, temporality and

personal and social commonplaces to seek understandings of the similarities and differences between the participants' storied identities as eLI's and their effectiveness in carrying out their duties.

Results from the study confirmed a number of commonalities between the eLI's despite their working in dissimilar environments. These commonalities included an acknowledgement that ICT's needed to be offered as a tool to allow pedagogical change to take place and not an end in themselves. The technology also provided teachers with a vehicle to deliver content and the eLI's used this knowledge to further encourage classroom use of IT. Administrative tasks, accreditation pressures and Executive staff leadership were all important factors in shaping the successes that the eLI's experienced. The TPACK framework also fell within the scope of the study and among the conclusions that were reached; an expanded framework is offered in the study.

The study supported the conclusion that it is a combination of the narrative commonalities that shaped the participants and their practices. The eLI was a product of their storied identity while at the same time the actions, beliefs and approaches that they took to fulfil their role added to that storied identity.

Certification of Thesis

This thesis is entirely the work of Christopher Shane Byrne except where otherwise acknowledged. The work is original and has not previously been submitted for any other award, except where acknowledged.

Student and supervisors' signatures of endorsement are held at USQ.

Professor Peter Albion

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Principal Supervisor

Associate Professor Dorothy Andrews

_____
Associate Supervisor

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Dedication

Remembering and honouring
Peter Richard Byrne
1933 – 2012
My mentor, my role model, my father, my friend.

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Chapter 1 Introduction

This thesis uses a methodology of data collection, analysis and presentation known as Narrative Inquiry. It uses the storied identities or personal narratives of individuals to help to inform the researcher. As such, I choose to begin this paper with a selection of memories from my own narrative. This will provide the reader with some insight into the grounding that I have in the subject matter to be studied – that being the incorporation of Information and Communication Technologies (ICT) into classroom practices.

By starting in this manner the reader is better placed in the context of this study. It is only through my own storied identity that I have arrived at this point and it is my storied identity that will change because of this research and thesis. Also sharing at least part of my story may help the reader to understand why some of the conclusions of the study are reached, given that a Narrative Inquiry approach necessitates sharing of stories between the participant and the researcher.

This first chapter is written to provide the reader with an insight into my personal narrative in this field and it will provide an understanding of how I arrived at this point of wanting to study ICT incorporation into pedagogy. It may bring back similar memories for you. It is written in an unconventional manner for a thesis, but quite conventional for a good story. Not that it is particularly interesting or insightful or clever, but it is an honest reflection of my journey in Education to the point where I thought that doing a Doctorate was a good idea in order to better understand what it is I am trying to do as an Educator.

1.1 Introduction to the Digital World

I'll cut to the chase. Well to the start of the chase. You can imagine it I know, a 15-year-old boy growing up in a New South Wales country town with limited opportunities for anything out of the ordinary, anything new. Just a few years before I had been given my first digital device – a watch which told the time, the date and seconds. I'll Google an image of it for you. Oh wait, I cannot do that. You see, living in China has its limitations and Google is one of them.

Still, my memory of these events is as clear as the impact that they have had on my life since then. The watch was exciting, but not for long. Like most kids around that time, arguments with my friends abounded about much more incredibly important issues such as whether VHS was better than Beta, whether Darth Vader really was Luke's father and how on earth Steve Gearin caught that ball in the Grand Final against the Eastern Suburbs Roosters.

The year 1980 saw my school purchase 15 Tandy TRS-80 computers and place them in a room not much bigger than an office area and certainly much smaller than a regular classroom. I was in Year 10 at the time and was fortunate to have a mathematics teacher, Mr. Gonzales, who was interested in computers. He subsequently opened a store in town selling Apple computers while holding down his teaching day job. To say 'Gonzo' was just interested in computers was an understatement. He had a passion for the devices and he passed that passion on to me. Every chance our class had, we were taken to the computer lab and we

were taught how to program and used some of the few programs that came with the devices, like mathematics drills, which we had to load via cassette tape.

On reflection, programming was an obvious thing to do with the devices, since there were so few programs suited to Education at the time and we didn't want to just do mathematics drills each lesson. So at the age of 15 I was hooked. I could program in BASIC which afforded me quite a bit of prestige amongst my peers – it took only 3 minutes whilst the Myer sales assistant's back was turned and I could get a display computer to print out "Myers Sucks" in large letters on the black and white screen for other customers to see. Good times.

Over my senior years at school, I continued to have Gonzo as my mathematics teacher and we continued to use the TRS-80's at every opportunity we could get, whilst trying to study for the Higher School Certificate. As the school purchased software, we progressed from just programming in BASIC and doing simple drill activities, to using software like backgammon and blackjack. To be honest we probably spent too much time in front of those computers. Because of my interest, I became the 'go to' kid for other students who were struggling with programming. Helping my peers to learn was quite a buzz. It still is.

1.2 Son, Get a Degree

My other love was sport. As I was growing up I often imagined myself as Kurt Russell in the Disney film, "The computer wore tennis shoes" – the movie combined my two great interests in life. I went to the Catholic College of

Education Sydney, (CCES) to earn a degree in Physical Education (PE). I lasted two weeks. It was a revelation to me, but PE is not just about playing sport all day. I changed course to do a Primary Teaching Diploma – it was either that or Mathematics/Science and I had only a mild interest in those subjects at the time. My reasoning at the time was that by doing Primary I could take the students out for sport a lot, without having to worry about the physiology or biomechanics behind it all. My father also advised me at the time, "When you are 50 do you want to still be running around an oval with a bunch of kids?" Actually, I do.

From a computing perspective, college was quite disappointing. CCES had a row of about 10 computers. I don't even remember the brand, as it was not something that primary teachers needed to worry about. This was between the years 1983 and 1985. I had to go to a nearby University to use a computer to type up assignments as the computer bank at CCES was locked up when a class was not in the room… not that we had to type up assignments as handwritten essays were the norm back then.

We had a subject called Educational Technology. I learnt how to write on a blackboard, learnt the secret knowledge of drawing some lines on the board a meter ruler width apart in a dark permanent marker to help with my writing. I learnt how to use a spirit Fordigraph, and write on acetate and use an overhead projector. Innovation consisted of acetate overlays similar to the Cel methods used by cartoonists and putting all your content on acetate rolls that you could take from classroom to classroom. Why a primary teacher needed that, we never bothered to ask.

1.3 My First Teaching Position

So, aged 20 and armed with a freshly printed Diploma I got my first teaching position at a Primary School. I knew how to teach, because the diploma proved it and I had spent the previous 15 years observing teachers and lecturers well practised in the art of educating. My class, a third grade, consisted of around 32 students in straight rows who were taught how I was taught. After all, it worked on me.

About a month in, no word of a lie, I 'discovered' the computer lab. It was under the library in an area that these days would certainly house the IT support department. It featured narrow windows that could not be opened, poor lighting, squeaky fans and around 20 beautiful, almost new, enticing Microbee computers just waiting for my Year 3 students to use. The story was that the school had a large Aboriginal population and as part of a government grant, a lab of computers was put into the school. The fact that it took me a month to know they even existed was testament to the view held by the vast majority of staff as to their educational worth.

From that initial discovery until the end of the year my class made a constant bee line (I resist calling it a micro-bee line) between the computer lab and our regular classroom. My students used programs such as *Raft Away River, Dinosaur Discovery*, and *Maths Invaders*. They published stories using *WordBee.* They also learnt the basics of BASIC programming entirely due to my interest in this aspect

of computing. These pupils were 8 years old, but they really took to the programming – well some of them did.

1.4 Primary Teaching

Four primary schools in five years. One would think that there was something wrong with my commitment to my job. Nothing was further from the truth. Circumstance led me to this rather dubious employment record. It was mostly to do with a girl, who is now the mother of my children and my life partner but also to do with school budgeting decisions. I taught in two inner city schools after my time on the coast, before marrying and moving back north to another Mid North Coast Catholic primary school.

I never again had the luxury of a computer lab to take my primary classes to. I did, however, continue in my unofficial role as 'the go-to-guy' when it came to using the computers that the schools did have. At the time Apple computers were becoming popular. We had them in large wire baskets for moving between classrooms at one school I was at. Perhaps that is why I was the go-to-guy. None of the female teachers wanted to lug them all around the school, although I'm sure they were physically able.

These were the days of *Carmen San Diego* – not available on the Microbees, but certainly a popular seller for the Apple II. Educational software was improving. It was not just about drill and practice anymore, or as a substitute for an exercise book. Other programs were becoming popular as well – Apple had a spreadsheet

program, *Visicalc* regarded by many as the first ever 'killer' app. That was not why Apple was becoming popular in schools I taught in. We didn't need a spreadsheet in the primary school. We needed programs to show off our creative flair, like *PrintShop* and *Bank Street Writer.*

It was at this time (1987) that I was introduced to the first productivity use of the computer for educational purposes. The 5th grade teacher, an amazing American woman who permanently had a 2-litre bottle of coke at the teacher's desk, showed me how she now programmed. I am not talking coding, but rather that horrible task all primary teachers despise, writing a teaching program. Well, she had it all on computer and just changed the dates each year, swapped the various themes around into different terms and cut and pasted comments, making subtle changes to keep the program relevant. This was a time saver I was ready for. Unfortunately, the school lost numbers and they had to lose a teacher. Last on – first off.

The next primary school I taught at had no interest in computers. At this inner city school there were a couple in the library, but none in the classrooms. That's not to say that the school was dragging its heels – it just had a different focus. Well two. 'New Math' and the English Literacy In-service Course (ELIC). The school was trying to change its pedagogy with innovations like group work in maths, and a heavy emphasis on wonderful literature and literacy. The catch cry was 'Immerse them in print '. And they did.

I had to leave that school, as even in 1988 housing affordability in Sydney was beyond the reach of young couples just starting out. The Mid North Coast was much more affordable and I spent two wonderful years there, back in an Apple environment. Each class had two Apple IIe computers. I had drifted away from teaching programming skills to the students. There was so much more to explore like how to teach *Appleworks* to the students, and how to make illegal copies of software titles using utility programs like *Disk Muncher*.

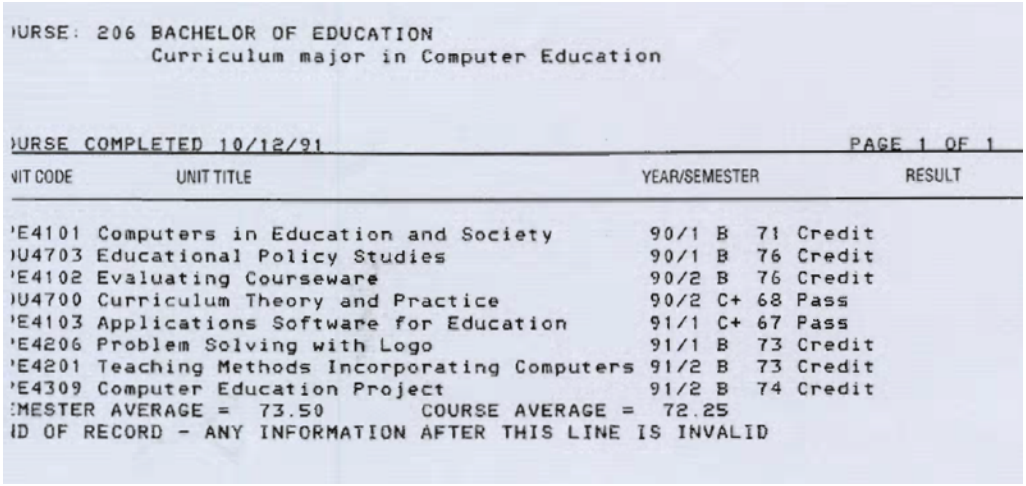
While at my final primary school, I was first introduced to a whole new way of interacting with computers. It was 'Insanely Great' and it was the Macintosh SE. These machines were not for the students. We had one in the staff room (which no one wanted to use because whatever you did was in full view of the rest of the staff) and the Principal had one in his office. The GUI was intuitive and it meant that I could be more productive. I created *Hypercard* stacks in the hope that I would be able to take one of these machines into my classroom (I never could). I created graphics using *Macdraw* and *Macpaint.* I experimented with *Afterdark* – something called a screen saver. I bought my first computer. Not a Macintosh SE, an Apple IIe which the school was selling. I later sold it to my mother, realizing that it was too expensive for the use I got out of it at home.

1.5 Back to University

At this time, I decided to follow my passion. I enrolled in my 'Fourth Year'. This was something that many teachers did who were only 3 year trained and wanted to get a pay rise or be able to apply for positions of responsibility within a school.

The University had a totally external B.Ed course which suited me on the coast. I could specialize in Computing in Education. I looked forward to reading the theories surrounding computers in Education and getting back into some coding.

The subject list makes for interesting reading.



)URSE: 206 BACHELOR OF EDUCATION
Curriculum major in Computer Education

)URSE COMPLETED 10/12/91 PAGE 1 OF 1

NIT CODE	UNIT TITLE	YEAR/SEMESTER	RESULT
'E4101	Computers in Education and Society	90/1 B 71	Credit
)U4703	Educational Policy Studies	90/1 B 76	Credit
'E4102	Evaluating Courseware	90/2 B 76	Credit
)U4700	Curriculum Theory and Practice	90/2 C+ 68	Pass
'E4103	Applications Software for Education	91/1 C+ 67	Pass
'E4206	Problem Solving with Logo	91/1 B 73	Credit
'E4201	Teaching Methods Incorporating Computers	91/2 B 73	Credit
'E4309	Computer Education Project	91/2 B 74	Credit

:MESTER AVERAGE = 73.50 COURSE AVERAGE = 72.25
ID OF RECORD - ANY INFORMATION AFTER THIS LINE IS INVALID

Figure 1.1. My Course subjects in 1990 -91 majoring in Computers

Disappointment again. No, not the fact that I achieved only a credit average. The programming language we were required to learn was Logo. Now, don't get me wrong. I could see its place in the Education environment. But I wanted to learn Delphi or Pascal or C. None of these was an option. I did, however, have the ability to be able to say that I was completing my Fourth Year, specializing in Computing in Education. This was enough to get me a job at Oakhill College, Castle Hill. I was back in Sydney as a specialist Computing Studies teacher.

1.6 Teaching Computing in Secondary

Four schools in five years became five schools in 14 years. If my computing experiences up until this point were the entrée, then my first secondary school

posting was the main course. I witnessed the introduction of the World Wide Web (WWW) at the College. I learnt about network management using Novell OS. I taught applications using BBC computers, Archimedes computers, PC's and Macs. I taught software programming using Basic and Visual Basic. I had classes full of eager year 9 and 10 students who wanted to know about computers. I had classes full of jaded year 11 and 12 students who realized, as did I, that the curriculum was not offering what they wanted – Year 9 and 10 Computer Studies, followed by 2 Unit Computing (later Information Processes and Technologies) meant four years of *Microsoft Office* type applications.

At least 3 Unit Computing (later Software Design and Development) was of more interest and possibly more benefit to students who wanted to pursue a career in the Computing industry and there were plenty of takers there too. I witnessed the power and versatility of networked computers – from sharing a printer, through to *Mazewars*, linking computers together was beneficial. Pushing software to a classroom full of computers at one time was great – and what a time saver. Students having a directory dedicated to them regardless of what machine they were on was a real advance.

Linking to computers outside the classroom was also useful. Telstra's *Discovery* service meant that I could look at my bank account details at the blistering pace of 1200 bits per second (bps). I could put messages onto bulletin boards (at 75 bps) and have discussions with people in chat rooms. I could check out the weather forecast and even look up phone numbers. I could find an image and

download it in less than 20 minutes. This was before the internet caught on or was even known about, but the promise was there.

Perhaps the software packages that inspired me the most that the Archimedes computers offered were a couple of multimedia authoring packages called *Genesis* and *Magpie*. With these packages, you could create your own content by mixing words, pictures, video clips and sound. I had played with *Hypercard* stacks years before, but this was different. I could make my own content and push it to student machines. Students could look at the content as often as they needed, at a pace that suited them. I could not articulate differentiated learning at the time, but this is what I could now offer my students. It was like a personal *Encarta* suited just for the topics I was to teach.

1.7 Teaching Teachers in Secondary

The new millennium saw me change schools to a promoted position. I became Computer Coordinator and Network Manager at a Central Coast Secondary College. Initially I installed a Novell network at the College, gave each teacher an email address, gave each student their own 'home directory' and took the school to 5 computer labs, which the teachers could book online and be confident that the computers would work.

I installed a piece of software called *Net Support* on the machines that would allow teachers to control the whole lab of computers – lock the screens, monitor each machine, communicate with individual or groups of computers, and allow

only certain programs to run. It was very popular and quite reliable for most of its features. This software allowed the teachers to feel in control of the classroom. It meant more teachers were willing to take their classes to the computer labs.

This was combined with a decision that I pushed to get a machine on every teacher's desk. Having a computer in front of them made each teacher at least able to do things like research whenever they had the time. In addition, making some administrative tasks like reports need to be done via the computer meant that teachers had to use them for at least some tasks. Having said that, there were some teachers who still wrote out their report comments by hand and then handed them to the staff secretary to be typed up.

During my time at St Edward's I was asked to become the full time Network Manager with no teaching load. I took this role on with the understanding that I could review it at the end of 12 months. The review led to me opting to become ICT Coordinator and employing a Network Manager from industry. I was still the Computer Department Coordinator. This was an interesting double act, as my role, as ICT Coordinator was to push ICT into all the various syllabus fields, yet my role as Computer Coordinator was to advocate for students to be taught computers by a specialist Computing teacher.

My own philosophy at this time was based around the idea that computers should be used as a tool in all subjects, and students should not need to be taught *Office Suite* type applications just in case they ever needed them. Using ICT in subjects like art or music or humanities for specific projects seemed to be a more

authentic use of the devices and I thought led to learning that was more authentic. Looking at the small numbers of students doing ICT at the HSC, it appears that the students have agreed and voted with their feet.

A final challenge that I had was based around a change in Technology and Applied Studies (TAS) mandatory in Years 7 and 8. The Design and Technology (D & T) teachers were required to teach the students a unit on Digital Technology. There were six teachers and two were up to the task of teaching web design using *Dreamweaver*. The problem was that all six teachers were expected to teach the 8 to 10 week program. Some of these teachers were lagging adopters and at least one was a technophobe – to the point of refusal to turn up to planned and mandatory PD sessions on what was put in place for them to be able to run the project.

I solved this dilemma by creating a series of around 17 video tutorials in the form of screen casts, which took the students through every step of the process of creating a web site. I also created a library of resources that students could download so that they could follow the tutorials and achieve a web site. The tutorials were always pushing students to come up with their own ideas, creative content and so on.

The staff were introduced to the package and shown how easy it was to run – simply get the students to click on the link and follow the tutorials in order. Staff were in-serviced on the basic operations of *Dreamweaver* and encouraged to follow the tutorials along with the students. This approach proved very popular

with the staff as they had the ability to direct the students to where they could find answers, the staff were able to follow on themselves, students were able to work at their own pace (dependent on staff wishes). Many staff used a combination of their own input together with the tutorials. As they gained in confidence they relied on the tutorials less; however, they were always there for the staff if they thought that the students needed them.

Students were engaged, they were creating content of their own, they were able to follow along when and where necessary and it allowed for self-paced learning. This package was used by the staff for about 4 years, allowing them to grow in confidence while delivering content that the students required.

1.8 Working in the Tertiary Sector in an International Setting

In 2007 I moved to the Middle East to take up a position as a Computing teacher within the United Arab Emirates (UAE) University sector. I taught for 5 years at the Higher Colleges of Technology. The campus I was in was a female-only University and over the course of the five years, I taught basic computer skills (*Word, Excel,* databases, touch typing etc.). I also 'lectured' in a Business IT Diploma Course and an Information Technology Degree course.

Whilst I was not in a position of responsibility, I was again the 'go-to-guy' when it came to using technology in the classroom. Over the course of the 5 years, I helped introduce a 1 to 1 laptop program, gave Professional Development on *Net Support*, *Blackboard LMS*, *Sharepoint* and a host of other applications. I was the

driving force for *Net Support,* which was great when we had labs, but when we went to a wireless 1 to 1 infrastructure, a number of difficulties arose with the use of the package. We did overcome nearly all of the difficulties; however, reliability issues meant that staff were not keen to support the software in a wireless environment.

During this period, I completed a University Masters in Education (Computing). My research was based around the use of mobile technology for delivery of content, and how effective that method of delivery was. I also started my doctorate during this time. My work with the older students (18 – 40 year olds) was incredibly rewarding and combined with my interest in helping staff incorporate ICT into their teaching practices, I knew I wanted to pursue this interest in teaching adults how to use technology. I considered that my ideal job would be to teach future teachers how to incorporate ICT into their curriculum areas. I am still of that mind and this doctorate is a necessary step along that path.

1.9 Return to Australia

In 2012, after five wonderful years in Higher Education in the UAE I returned to Australia and found myself teaching in a State High School on the Central Coast of NSW. This was my first, albeit brief, introduction to teaching in the NSW State School System. I could see first-hand the issues surrounding the Government's Digital Education Revolution (DER). All the students between Years 9 and 12 had received portable devices at the school, funded by the government.

By the time I arrived, they were only in Years 10 – 12 because the school chose to pass ownership of the devices over to the students. This meant that when the Year 12 cohort left, so did the devices. As of 2015 there were no Personal Learning Devices (PLD's) left at the school as the original Year 9 cohort had graduated and taken the tablets with them. Therefore, in 2015 the school was back to its one computer lab. There was a technician who was at the school most days, but who left about 18 months after I did because government funding for him ended with the demise of the DER.

There was no ICT coordinator position at the school in any formal sense. One of the TAS teachers elected to take on part of the role in an unofficial capacity due to his interest in the technology. He was severely restricted by time considerations and the lack of direction that the school seem to have in this area. All things considered he did quite a good job considering lack of time allowance, the lack of resources, the lack of a budget of any type, and the lack of a clear direction in incorporating ICT into the school.

1.10 Seeing What is Possible and Some of the Blockages

A position came up in a Western Sydney high school, and although I was very concerned about the 2 hour commute each way, the school seemed quite progressive. Just how progressive will become clear in later chapters of this paper as the ICT Coordinator at school is one of the participants that I chose for my study. As the study participants are anonymous, I'll call the participant Sharon. It was here where I truly experienced the great learning potential of ICT

when combined with modern pedagogy and collaborative teaching methodologies. The school is a recognized frontrunner in innovative teaching practices in Australia and I was very lucky to spend almost 2 years there.

As I will be describing the school in detail in a later chapter I will not continue talking about it now. I did leave the school and that four-hour daily commute, trading it for another Northern Sydney school but only 50 minutes commute each way. Again, as the ICT coordinator at the school is part of my study, for the purposes of anonymity I will call the ICT coordinator Ned. The school is much more traditional than the Western Sydney one, and although they have a one-to-one PLD environment, the school is grounded in traditional pedagogy. There is quite a strong resistance to all things ICT at the school by a large number of the staff. Most of these staff had been at the same school for many, many years. Again, because I will be discussing the school in some depth in later chapters I will not continue to describe it now.

1.11 Putting My Theories into Practice

After 2 years at the Northern Sydney school, I left, not because I was not enjoying it – the students were great, the staff friendly, and the Principal quite supportive of my doctorate work. About 8 months in to my time there, my son came home from school and dropped a bombshell. "Mum, Dad, I want to go back overseas to finish my schooling." My wife and I could hardly contain our excitement. We had wanted to go back overseas from when we first arrived back in Australia, but

resisted because our children were settling in nicely and the timing was all wrong. University and HSC for our daughters had been a priority.

Our search began for a position in a school in an international setting. There were opportunities in places like Uzbekistan, Mongolia, as well as quite a few European postings. There were a lot of schools around South East Asia who wanted ICT coordinators but they all required a working knowledge of the International Baccalaureate or IGCSE and A-level British Curriculum experience. I had none of these experiences.

Luckily, a group of International Schools were advertising for an ICT integrator. As this was the focus of the role, they were quite happy to employ me to take on this position, and since I had ICT and Software Design experience, they were willing to let me teach IGCSE and IB Computer Science. So now, I am in Shanghai, with the opportunity to put my theories and knowledge into practice once again. I share the integrator role with another Australian who is technically excellent and who has a great rapport with the staff.

Our brief for next year includes implementing a one-to-one device environment. At the same time, the Head of all the schools has announced a change in pedagogy across all 15 or so campuses in 3 countries (China, Hong Kong and the USA). So perhaps, just perhaps I have taken a position in a school where the innovation that I saw in Western Sydney can be mirrored. Only time will tell I guess.

So now that you have an understanding of my ICT narrative it is time to consider my journey in the context of the wider ICT research community and the historical perspectives of ICT that have led to where we are today.

Chapter 2 Historical Perspectives

This chapter will look briefly at the historical perspectives of computer use in education. It will trace the evolution of the devices as well as the changing ways the devices have been viewed from an educational perspective. Some of the major milestones that have shaped the way that Information and Communication Technologies (ICT) can be used in the classroom as well as a few of the leading thinkers on ICT use will be identified. The chapter will also outline some of the initiatives that have occurred from external sources such as government and corporation initiatives.

2.1 The Very Early Years

ICT have been used in schools for a myriad of purposes since the advent of the personal computer in the late 1970's. Since that time educators, researchers and thinkers have all delved into the challenge of how best to use ICT with varied success (Ertmer & Ottenbreit-Leftwich, 2013; Jonassen, 1996; Molnar, 1997; White, 2008). The use of computers in education dates back almost as far as when the first operational computers were put into use – the Mark 1 in 1944 at Harvard and the better known ENIAC housed at the University of Pennsylvania, in 1946 (Levien, 1972). In 1959, Donald Bitier, who was working at the University of Illinois, started a program called PLATO, which over time, allowed thousands of undergraduate students to link to the University Mainframe and gain access to the computing power it afforded. Given this as the beginning of computer use in education, then the pursuit is around 55 years in the making (Molnar, 1990).

Highlights in the early years included the development of 'Microworlds' by Seymour Papert in the 1970's. These Microworlds included music, physics and geometry, all designed to change the way that mathematics was taught, and as importantly, how mathematics instruction and use was thought about in the classroom. He developed a programming language called LOGO which was still being used some 20 years later as a programming language students were required to master in B. Ed courses. He further developed his ideas, with a constructivist approach aided by the combination of LOGO with LEGO construction kits. The theoretical underpinning was that students would learn necessary problem solving skills based on their given or self-described problem definition. In other words, Papert was trying to "move education from 'computer literacy', an appreciation of computing, to 'computer fluency', the application of computers to solve real problems" (Molnar, 1997, p. 4).

Prior to this in the 1960's, there was a research and development attempt by Suppes and Atkinson at Stanford University (Taylor, 1980). They attempted to cater for differentiation between students before it was the buzzword it has become today. They created self-paced programs in mathematics and reading, allowing the user to work at their own speed and be corrected by immediate feedback. This was the beginning of the use of computers for drill and practice activities that pervaded the education sector a little later on, starting around the mid 1970's.

2.2 The Personal Computer Evolution

In 1975 the personal computer revolution got underway with devices such as MIT's Altaire inspiring enthusiasts which led to better machines like the Apple II in 1977 and the IBM PC in 1981. This evolution of technology meant that it was now affordable for schools to put stand-alone computers into classrooms. Early on teachers were bombarded with a range of programs that afforded incorporation into such classroom activities as simulations, drill and practice, presentation, research and reward. Other programs allowed teachers to transfer paper-based activities such as writing, collating and calculating onto a computer in the form of word processing, databases and spreadsheets.

Whilst some teachers leapt to incorporate ICT into their pedagogy, and significant moves were made towards the incorporation of productivity software into the education field during the 1980's, few were incorporating ICT to change the way they taught. This is consistent with the way Maddux (2005) conceived educational application of Information Technology as being either type I or type II in nature. Type I applications "simply make it easier, quicker or more convenient to continue learning in traditional ways" (p. 20), whereas Type II applications "make available new and better ways of teaching or learning" (p. 20).

The seed for real change occurred in 1989 when Tim Berners-Lee and Robert Cailliau put forward a proposal at CERN which was designed to allow for a better management of documents using computers that were connected together (White, 2008). Their work became better known as the World Wide Web (WWW)

and it proliferated, along with the uptake of computers worldwide, in order to gain access to the growing amount of information that was now available. Teachers were now able to provide their students with information as quickly as their connection speed allowed, which at the time was quite slowly. Throughout the 1990's as technology improved, so too did the uptake of computers by Education institutions.

2.3 Teacher Use Not Matching the Hype

This uptake was not without its problems and questions about the validity of the devices as educational tools. In the early 1990's James Kulik performed a meta-analysis of several hundred studies into the effectiveness of computers in education at the University of Michigan. He found in this analysis that "computer based education could increase scores from 10 to 20 percentile points and reduce time necessary to achieve goals by one-third" (Molnar, 1997, p. 4). However, doing better is not analogous to doing better things, and in the classroom, teachers were being challenged to use the devices in new and interesting ways. In 1996, Jonassen described the ways that students in classes were expected to interact with technology and this was summarized by Ertmer and Ottenbreit-Leftwich, (2013) as "learning about technology (technology as a subject), learning from technology (technology as a delivery tool), and learning with technology (technology as a cognitive partner)" (p. 176).

It appeared that in the mid 1990's teachers were not moving much beyond the learning about technology phase. Findings from the *Apple Classrooms of*

Tomorrow initiative reported that despite placing state of the art technology into the classrooms, thus eliminating many of the first order barriers (see Chapter 3), the "most difficult effort related not to securing technology for the classroom but to the subsequent need for teachers to apply new ideas about teaching and learning" (Ertmer & Ottenbreit-Leftwich, 2013, p. 176). The vision for many researchers at this time (Bracewell, Breuleux, Laferrière, Benoit, & Abdous, 1998; Collis, 1998, March; Simpson, Payne, Munro, & Lynch, 1998) was student-centred learning aided by the use of technology, and research was proving that simply putting the technology into the classrooms was not enough to achieve this goal (Hooper & Rieber, 1995). The 1996 National Education Assessment Program conducted in the United States reported that only 5% of mathematics teachers surveyed, working in the 8th grade, used computers to help explain new mathematical concepts. The same study found that the highest use of technology (18%) by those teachers was drill and practice activities (Cuban, 2001).

Around the turn of the century, a change took place in how the World Wide Web was being used. At the time of the dot com crash of 2001, rationalization of the internet took place and the focus switched from an information provision service to the read/write platform that Berners-Lee had originally envisioned and which internet browsers were now able to support. Users began blogging, podcasting, collaborating, social networking, creating wikis and a myriad of other user-centric activities (White, 2008). This changed focus has been commonly referred to as Web 2.0, a term first coined by Darcy (DiNucci, 1999), which was subsequently adopted to describe this move towards social media. These web 2.0 tools had the capacity to "connect learners to a wide network of critical others

who [could] offer feedback or support" (Ertmer & Ottenbreit-Leftwich, 2013, p. 176). The tools also offered learners a place to showcase their thoughts, ideas and achievements to a huge audience, or a very select audience if required.

2.4 Meanwhile in Australia

What was occurring overseas was also being mirrored at the same time in Australia. Australian Government statements dating back to before the 1990's, call for the need for ICT skills to help students with vocational training and other possible benefits to learning (see Hobart Declaration on Schooling, (Australian EducationAustralian Education Council, 1989). However, it is mainly due to the proliferation of the WWW and the move towards Web 2.0 technologies, that many in education began to see the need for a more focused approach to the incorporation of ICT skills within the classroom. In 2000 a South Australian State Government report stated, "IT literacy is becoming the '4th R' of the basic competencies every individual needs" (White, 2008, p. 44). However, the emphasis was broadening to include the teachers as well as the students. This emphasis on teacher competency, as well as students was not a new idea, however, as Kenway (1998) observed that in order for teachers to be able to creatively and competently teach their students via ICT, and to use ICT "they must be skilled, informed and critical users themselves" (p. 83).

Although certainly not amongst the first statements about ICT integration, in 2008 the Ministerial Council for Education, Early Childhood Development and Youth Affairs (MCEECDYA) released the Melbourne Declaration on Educational Goals for Young Australians. In this report they stated, "the development of

practical ICT, design and technology skills … are … central to Australia's skilled economy and provide crucial pathways to post-school success" (MCEECDYA, 2008, p. 13). Whether these skills are developed through the teaching of ICT as a subject or through the integration of ICT into subject areas is not the critical point, rather it is that Government reports such as the Melbourne Declaration dating back many years have highlighted the importance of the need for effective ICT skills to be developed at school.

Around the same time as the Melbourne Declaration, a national survey in the United States, Project Tomorrow's Speak Up 2007, reported on teachers' use of ICT to facilitate student learning in and out of the classroom. Of those teachers responding, 51% indicated their primary uses of ICT comprised asking students to complete homework digitally, and running drill and practice packages in class (Ertmer & Ottenbreit-Leftwich, 2010). Therefore, while educators at the time were advocating that the best use for such tools occurred when students "use it as a cognitive partner … to analyse information, interpret and transform that information into their own personal knowledge, and then represent that knowledge to others" (Ertmer & Ottenbreit-Leftwich, 2013, p. 176), it appeared that the technologies were still being used as 'learning from' devices. The National Education Association in 2008 described teachers' efforts as "[w]e are still woefully short of classroom environments that permit students to engage with technology in a way that prepares them to use technology in the real world" (Van Roekel, 2008, p. 12)

From an Australian student perspective, in 2005 a national assessment on ICT literacy was developed. At this time, it found that 49% of Year 6 students reached the proficient standard, and 61% of Year 10 students achieved proficiency. (MCEETYA, 2007). According to Meiers, Knight, and White (2009) the report went on to state that ICT was being used in very limited ways: "Communication with peers and using the internet to look up information are frequent applications, but there is much less frequent use of applications that involve creating, analyzing or transforming information" (p. 4). A 2007 Second International Technology in Education (SITES) survey conducted in Australia which concentrated primarily on Science and Mathematics teachers found that whilst 86.1% of the Science teachers and 68.6% of the Mathematics teachers surveyed reported using ICT in their teaching, their confidence levels in incorporating such technologies were much lower, at 56.1 and 54.1 percent respectively (Ainley, 2010, July). Whilst these figures put Australia towards the top of the 23 countries involved in the survey, the ICT related professional development (PD) figures were much worse with only 48.7% of teachers reporting participation in ICT based PD. This placed Australia 6th last (Ainley, 2010, July, p. 6).

Also happening at around the same time, with the Rudd Labor government winning the 2007 Federal Election, the promise of a Digital Education Revolution (DER) became Federal Government policy. This revolution promised "sustainable and meaningful change to teaching and learning in Australian schools that will prepare students for further education, training, jobs of the future and to live and work in a digital world" (DEEWR, 2008, p. 1). Since then

Australia has seen a huge increase in the number of computers available in schools with the goal of a 1:1 ratio of computers to students, especially from Year 9 onwards (Moyle, 2010). Part of the commitment was to also provide broadband access (DEEWR, 2008) which will support the introduction of a national curriculum by providing students in all parts of Australia with online access to resources. Regionally, a recent study by Kong, Chan, Huang, and Cheah (2014) indicates that in parts of Asia government expectation is still apparent, at least in Singapore, Hong Kong, Beijing and Taiwan where their study focused. Their report indicates that the focus of the expectation has changed from one of supply of ICT technology as was the primary objective of the DER, to a call to emphasize pedagogical advancement of ICT-supported classroom learning. Therefore, today, from a political perspective too, there is an expectation that ICT will be incorporated into curriculum and teaching practices.

2.5 What is Impeding Integration?

It appears that even in the most recent history of computers in education, there is still a gap between the expectation and the practice. The International Computer and Information Literacy Study (ICILS), conducted by the International Association of Educational Achievement (IEA), reported that in general terms, "the teachers appear to have been using ICT most frequently for relatively simple tasks rather than for more complex tasks" (Fraillon, Ainley, Schulz, Friedman, & Gebhardt, 2014, p. 227). Other contemporary researchers concur with these findings, stating that teachers still "integrate such technologies within familiar practices rather than exploring new methods of teaching" (Erstad, Eickelmann, & Eichhorn, 2015, p. 643).

What has intrigued researchers for many years is why this integration is happening so slowly. The next chapter will explore the research surrounding why teacher uptake is slow and still of concern. The chapter reports some of the factors that have been put forward as reasons why integration is not happening as desired, both time-wise and *in the ways* that the technology is being used. The chapter will also describe some frameworks which, may assist in helping identify what knowledge, skills and attitudes teachers need in order to accept the technology into their teaching practices. The chapter will conclude with one example of a way that integration can be encouraged.

Chapter 3 Teachers and ICT Integration

There are various ways to look at integration. It can be seen in some respects to be all about learning from ICT, in other respects related to learning through the use of ICT. For the purposes of this proposal it is defined as the pedagogy associated with the focus of being able to learn with the use of ICT, not as a surrogate teacher or a methodology of presentation, but rather as a tool to enhance learning activities and associated outcomes. This chapter looks at barriers that exist to ICT integration and where those barriers are today. The chapter also identifies the lack of necessary skills or attitudes that teachers possess that require addressing so that integration takes place as well as looking at the changing focus over time as to what are the actual perceived needs.

A number of scholars have looked into the apparent lag between ICT availability and teacher uptake of ICT as part of a meaningful and creative pedagogy. It could be due to the observed phenomenon that "the magnitude of change persons are asked to make is inversely related to their likelihood of making it" (Guskey, 1994, p. 5). Studies have revealed that if a teacher possesses more traditional beliefs regarding pedagogy, they will implement more "low-level" technology uses (Becker, 2000, January; Judson, 2006; Roehrig, Kruse, & Kern, 2007). On the other hand teachers who hold a more constructivist view will implement more "high-level" technology use (Ertmer & Ottenbreit-Leftwich, 2010). A 2008 study concurred with this finding; however, it had an interesting caveat: "Though the reported classroom use of ICT can *hardly be described as 'innovative' in nature*, constructivist teacher beliefs were found to be a strong predictor of classroom

use" (Hermans, Tondeur, Van Braak, & Valcke, 2008)[Emphasis added]. The report went on to state that a negative impact on the integrated classroom use of computers was found where teachers with traditional beliefs were operating. That is not to say that such teachers are opposed to computer technology use per se. The Cuban, Kirkpatrick, and Peck (2001) study found "no conspicuous evidence of teacher resistance; in fact, [they] found enthusiasm for home and school use for class preparation, communication, and administrative tasks" (p. 832).

Research has shown there may be a number of reasons, apart from a simple choice, which may explain why teachers have kept traditional beliefs about good teaching practices. These include societal expectations as well as testing and assessment regimes that encourage more traditional approaches to teaching and learning. As Ho and Albion (2010, March) explain, "… the demands of assessment may be limiting teacher freedom to adapt curriculum and pedagogy to integrate ICT" (p. 7). Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, and Sendurur (2012) reported similar attitudes towards state assessments in a study they conducted when they wrote, "state assessments operate as the biggest barrier to other teachers causing them to be slow to adopt new pedagogies as well as new tools" (p. 429). The report of Ertmer et al. goes on to identify other reasons given for slow uptake of technology and the pedagogic change that ensues, including the observation that if school administrations were "more supportive and had an agenda that promoted technology, it would be more widely adopted by teachers" (p. 429).

Another reason given in the Ertmer et al. study is best encapsulated by one of the participants who states, "I don't know how to do it and I don't have the time to learn, and if I learn I don't have time to do it" (Coley, in Ertmer et al., 2012, p. 429). Many teachers are of the belief that technology is just one more thing to add to the ever growing list of things to do in the classroom rather than viewing it as something that they can incorporate into what they are already doing (Ertmer et al., 2012). So perhaps it is their own perceptions of the role of technology in education that are holding many teachers back.

Other studies look at a broader picture, suggesting it is the schools that need to change. Kong et al. (2014) state that schools need to "reinterpret the objectives and structures of school curricula for the meaningful integration of ICT into curriculum delivery" (p. 188). However, as they point out, in and of itself this is not enough; teachers also need to be ready to adopt ICT in their pedagogic arrangements. Further they identify the need to have parental support, a holistic approach to ICT incorporation into curricula, as well as professional input from teachers, and the leadership of the school also needs to be supportive (Kong et al., 2014).

3.1 Teacher Beliefs as a Barrier to Integration

In addition to the number of causes found to contribute to the lack of ICT integration (see Chapter 3 introduction), Ertmer and Ottenbreit-Leftwich (2010) state that "when learning experiences are focused solely on the technology itself, with no specific connection to grade or content learning goals, teachers are unlikely to incorporate technology into their practices" (p. 263). This may be

attributable to the observations of Richardson (1996) who noted, "The beliefs that practicing teachers hold about subject matter, learning, and teaching [will] influence the way they approach staff development, what they will learn from it and how they change" (Richardson, 1996, p. 105).

More generally, Pajares (1992) puts it down to the sedentary nature of beliefs, stating that beliefs that people form very early in life are quite resistant to change, remaining virtually unchanged regardless of time, education or experiences. He goes on to state that it is the educational beliefs held by teachers, and in particular pre-service teachers that "play a pivotal role in their acquisition and interpretation of knowledge and subsequent teaching behavior" (Pajares, 1992, p. 328). In other words, Pajares claims, it is beliefs rather than knowledge that are stronger predictors of behaviours associated with organizing and defining tasks. One of the findings of Ertmer et al. (2012) supports this idea stating that "beliefs change before practice and … practices may be limited by first order barriers, especially if beliefs are peripheral or in transition" (p. 433).

Others, such as Guskey (1985), claim the opposite, arguing that behaviour may indeed precede beliefs – if teachers are helped to adopt new practices, then provided these practices are successful, associated beliefs will change. For the purposes of this study, this is a little like the 'chicken and the egg' question. The concern of this study is not to determine whether beliefs precede behaviours or whether the reverse is true. What is important is identifying barriers to integration and providing a possible way forward.

Ertmer (1999) lists a number of reasons as barriers to ICT integration including lack of access to ICT, lack of technical support, scarcity of high quality ICT type content in many subject areas, lack of ICT vision, deadlines, department structures and teacher discomfort with the technology. Lim and Khine (2006) go on to group the barriers into two distinct groups taken from work by a number of authors (Atkins & Vasu, 2000; Cuban et al., 2001; Ertmer, 1999; Means, Penuel, & Padilla, 2001). First order barriers are those that are extrinsic to the teacher such as lack of access to ICT technology, lack of time, the pressure for students to do well in exams and lack of training. Second (Shi, 2016)er barriers are described as "barriers that interfere with or impede fundamental change … these barriers are typically rooted in teachers' underlying beliefs about teaching and learning and may not be immediately apparent to others or even the teachers themselves (Ertmer, 1999, p. 51). Ertmer and Ottenbreit-Leftwich (2013) suggest that when considering these first and second order barriers the best way to bring more teachers on board is "not by eliminating more first order barriers, but by addressing the second order barriers of attitudes and beliefs" (p. 177) .

More recently, there has been the suggestion of the presence of a third order barrier to ICT integration. Shi (2016) describes this as a teacher's "lack of design thinking to tackle the 'wicked problem' of ICT integration"(abstract). Shi's work is based on earlier research carried out by Chai, Chin, Koh, and Tan (2013) and Tsai and Chai (2012) related to teachers' design thinking. They argue that:

> If a teacher has sufficient facility, rich digital instructional resources, positive attitudes or strong beliefs toward technology integration, he/she may not have successful implementation. As classroom context and students are quite

> dynamic, the teacher should rely on some design thinking to re-organise or create learning materials and activities, adapting to the instructional needs for different contexts or varying groups of learners. (p. 1058)

In other words, despite first and second order barriers being overcome, impediments still seem to exist that are a barrier to ICT integration. This barrier may relate to the teacher's perceptions about the "new cultures of learning [which] is largely learner directed without prescribed syllabi or learning trajectory" (Chai, Tan, Deng, & Koh, 2017, p. 2)

Following from earlier work in 1993, in 2001, Cuban, Kirkpatrick, and Peck warned that without major and fundamental changes to how schools are organized, how teachers are prepared and how time is allocated, "… only modest, peripheral modifications will occur in schooling, teaching, and learning. Teachers will adapt innovations to the contours of the self-contained classroom. New technologies will, paradoxically, sustain old practices" (Cuban et al., 2001, p. 830).

Despite more ICT access since that time, more recent studies have found that across a number of countries teachers continue to use traditional approaches to teaching. The 2006 IEA SITES study by Law and Pelgrum (2008) found that less than 60% of teachers across 22 countries use ICT for teaching. The Australian context was not part of this study; however, as already stated in the SITES study carried out in 2007 in Australia over 86% of Science teachers and almost 69% of Mathematics teachers were using ICT in their pedagogy (Ainley, 2010, July). More recently, a Western Australian survey of the use of ICT in primary mathematics

classrooms found similar results, reporting that 68% of teachers used ICT regularly. The same study also found that only 43% of final year Pre-Service teachers used ICT in their mathematics lessons (Day, 2013). Similarly Ho and Albion (2010, March) reported analogous findings of the persistence of traditional teaching practices in a Hong Kong study. One study differentiated between integration and simple use, stating that true integration "connotes full time daily operation within lessons" (Bauer & Kenton, 2005, p. 535) and that had not happened in schools where they surveyed. Their survey went on to highlight that hardware, time and student computer skill levels were major obstacles impeding true integration (Bauer & Kenton, 2005). Whilst this study does not focus primarily on classroom teachers, it does rely heavily on analysing beliefs of a group of teachers to gain insight into what barriers exist in integrating ICT and possible solutions to them. Later chapters, starting at Chapter 4, will explore this in more depth.

3.2 Factors Which Can Lead to ICT Integration

With all these widely reported obstacles to ICT integration, a number of researchers have written about the key factors that can lead to successful integration of ICT within a school environment. Several common factors are identified. Among them is the principle that teachers are the most important factor, "when establishing any classroom innovation, it is the teacher who is the key determinant of implementation" (Judson, 2006, p. 583). This notion is further expanded in another article which states that whilst teachers do not decide to place technology in their classrooms, "they make local decisions about whether

or not they will adopt a particular, often emerging technology" (Lee, Cerreto, & Lee, 2010, p. 180). More specific is the notion that "teacher quality is a critical factor in achieving quality learning outcomes for students" (Albion, Jamieson-Proctor, & Finger, 2010, March, p. 303). Indeed, "the quality of an Education system cannot exceed the quality of its teachers" (Barber & Mourshed, 2007, p. 7).

Another key factor is that of the school leadership. Somekh (2008) states that when looking at factors that affected teacher pedagogy, "the principal's vision and motivation were of central importance" (p. 457). Hall (2010a) further defines principals as falling into one of three categories, namely, Initiators, Managers and Responders. He states that, "In most studies, implementers in schools led by Initiators have the most success" (p. 250). He identifies the initiators' leadership qualities of having a strong set of ideas about what their school should be like and become, as well as their passion for the school, as being integral to their success as leaders of change.

Researchers have also written extensively on what needs to take place in the Education sphere if ICT is to be successfully incorporated into practice on a large scale. Voogt (2008) is credited with the notion that "educational reform efforts have consistently purported student-centred practices as the most effective instruction to prepare our students for the 21st century" (Ertmer & Ottenbreit-Leftwich, 2010, p. 15). More to the point, this reform is based on a new definition of what good teaching actually is, "teaching that revolves around student-centred practices and that leverage[s] relevant ICT tools and resources as meaningful

pedagogical tools" (p. 15). The authors go on to point out that integral to success is the need to help teachers to understand that technology that is supporting student-centred practices can positively affect student learning outcomes. They contend that this insight will potentially lead to teachers changing their knowledge, beliefs and culture and draw the conclusion that "teaching is not effective without the appropriate use of ICT resources" (p. 16).

These student-centred environments have a quantity of research and study surrounding them. Judson (2006) defines it in this way:

> Many school administrators now advocate that teachers put aside notions of traditional teaching in favor of developing learning environments where students share ideas, grapple with the meaning of new information, and defend divergent thinking. This type of student-centered and student-active learning is often called constructivism. (p. 582)

Judson goes on to state that such classrooms are facilitated by teachers who maintain dynamic classrooms where technology is a powerful learning tool (Judson, 2006). He does, however, point out that "utilization of technology is not a goal of constructivism. However, the use of technology may very well enable the dynamics of students constructing personal meaning, learning from one another, learning from experts and creating unique interpretations" (p. 592). There is a need for teachers to "shift from traditional educational paradigms towards emerging pedagogical approaches" (Forkhosh-Baruch, Mioduser, Nachmias, & Tubin, 2005, p. 204). These approaches should be based on what we know and currently understand about learning, such as "fostering learner

centered and constructivist processes and the acquisition of lifelong learning skills" (Forkhosh-Baruch et al., 2005, p. 204).

3.3 Identifying What Teachers Need in Order to Integrate ICT

Another strand of research is more interested in the knowledge that teachers acquire and sees it as vitally important in determining teacher implementation of ICT into their teaching practices. Shulman highlighted the teacher knowledge strand of research in 1986 when he published a paper which stated that teacher knowledge includes knowledge of the subject, known as content knowledge (CK), knowledge of classroom management strategies and teaching methodology, known as pedagogical knowledge (PK) and a combination of the two which deals with how to teach specific content to specific learners in a specific context, known as pedagogical content knowledge (PCK) (Judson, 2006). This pedagogical content knowledge is practical knowledge used by teachers:

> … to guide their actions in highly contextualized classroom settings…. [T]his form of practical knowledge entails, among other things: (a) knowledge of how to structure and represent academic content for direct teaching to students; (b) knowledge of the common conceptions, misconceptions, and difficulties that students encounter when learning particular content; and (c) knowledge of the specific teaching strategies that can be used to address students' learning needs in particular classroom circumstances. In the view of Shulman (and others), pedagogical content knowledge builds on other forms of professional knowledge, and is therefore a critical—and perhaps even the

paramount—constitutive element in the knowledge base of teaching. (Rowan et al., 2001)

Since this time, a number of scholars have stated that a T standing for technology needed to be added to Shulman's ideas.

3.4 The TPACK Framework

Recognized leaders of this push to include technology in Shulman's framework, Mishra and Koehler, extended Shulman's work to TPCK (now commonly referred to as TPACK) by adding Technological Knowledge (TK). This, by its very nature, extended the model by adding Technological Content Knowledge, (TCK), Technological Pedagogical Knowledge (TPK) and Technological Pedagogical Content Knowledge (TPCK) (Mishra & Koehler, 2006). They developed a diagram (refer Figure 3.1) to provide a view of the interconnectedness of the framework.

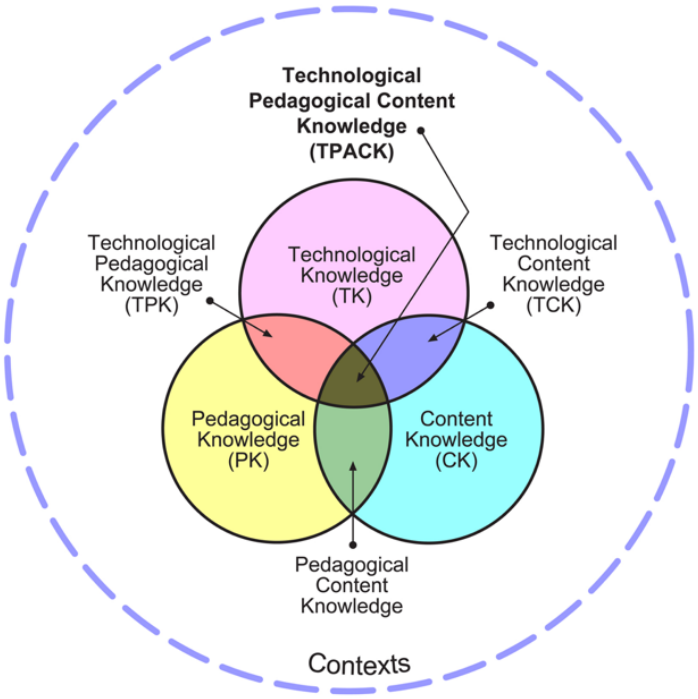


Figure 3.1. The TPACK framework (Mishra & Koehler, 2006)

There are seven components in the TPACK framework. At the very centre is Technological Pedagogical Content Knowledge (originally called TPCK (Mishra & Koehler, 2006) but later referred to as TPACK). This is an amalgam of the three core components of content, pedagogy and technology. Koehler and Mishra (2009) argue that TPACK goes beyond all three core components. In their view it "is an understanding that emerges from interactions among content, pedagogy and technology knowledge … [and] is the basis of effective teaching with technology" (p. 66). They go on to state that it requires a number of understandings and knowledge including how technologies can be used to build on existing knowledge, knowing students' prior knowledge as well as what challenges they may face in learning difficult concepts, knowing pedagogic techniques that use technology in constructive ways and knowing ways to represent concepts using technology (Koehler & Mishra, 2009).

Surrounding the TPACK heart (see Figure 3.1) are the three combinations or hybrid domains (Kimmons, 2015) of Pedagogical Content Knowledge (PCK), Technological Pedagogical Knowledge (TPK) and Technological Content Knowledge (TCK). Koehler and Mishra (2009) describe PCK in a similar way to how it is described in section 3.3 of this chapter. Central to it is the idea that subject matter is transformed by teachers into a form that suits their teaching methodology and the students they teach. The teacher "interprets the subject matter, finds multiple ways to represent it and adapts and tailors the instructional material to alternative conceptions and students' prior knowledge" (Koehler & Mishra, 2009, p. 64).

The TPK combination is described by Koehler and Mishra (2009) as an "understanding of how teaching and learning can change when particular technologies are used in particular ways" (p. 65). The authors go on to describe that it includes knowing what the technologies can offer and what limitations they possess in relation to "disciplinary and developmentally appropriate pedagogical designs and strategies" (p. 65). The authors describe the final combination, TCK, as "an understanding of the manner in which technology and content influence and constrain one another" (p. 65). They go on to explain that teachers "need to understand which specific technologies are best suited for addressing subject-matter learning in their domains and how the content dictates or perhaps even changes the technology—or vice versa" (p. 65).

Surrounding the three combinations are the primary knowledges or base domains (Kimmons, 2015) of Content (CK), Pedagogy (PK) and Technology (TK). Content Knowledge is described as the teacher's knowledge of the subject matter that they are trying to teach the students. Pedagogic Knowledge is described as "teachers' deep knowledge about the processes and practices or methods of teaching and learning" (Koehler & Mishra, 2009, p. 64). The authors describe Technological Knowledge as knowing about how to work with various technologies and resources. They state that this includes,

> understanding information technology broadly enough to apply it productively at work and in everyday life, being able to recognize when information technology can assist or impede the achievement of a goal, and being able to continually adapt to changes in information technology. (p. 64)

Surrounding the whole of the three circle Venn diagram is a dotted line indicating the contexts in which the framework may be used. Koehler and Mishra (2009) acknowledge that each situation where the framework may be applied is in some ways unique. They state that the individual teacher as well as such factors as the year level, factors specific to the school, demographics of the area and the various cultures involved in the education process will ensure that a uniqueness will exist in every situation where the framework is to be applied. This means that there will be different specifics about each of the seven components related directly to the contextual nature of the school setting.

Many researchers see this framework as integral to a better understanding of why technological innovation is either adopted or not in classroom practice. This is best described with the view that "TPACK represents the knowledge required to achieve the intent of the [curriculum implementation]" (Albion et al., 2010, March, p. 304). It will be used in this thesis as a tool to help the writer to analyse the data that is collected as well as a way to help the reader to understand some of the complexities surrounding ICT integration and theorising about why it is or is not happening in classrooms.

The TPACK model as it stands may have some deficiencies. Some have argued that the model is missing Knowledge of Learning – which would incorporate an "L" into the model and hence render the model TPLACK (Howland, Jonassen, & Marra, 2012). The functionality of the TPACK framework has also been questioned by some (Brantley-Dias & Ertmer, 2013; Kimmons, 2015). They claim it is too big to be functional – having seven separate domains to consider, whilst

also being too small by dividing the framework up into so many pieces that they "have become impossible to distinguish from one another" (Brantley-Dias & Ertmer, 2013, p. 104). This follows the 'Goldilocks Principle' (Katz & Raths, 1985) where an educational idea's functionality is related to its size because "some concepts appear to be too small (specific) for reasonable application whereas others appear to be too large (vague, general or ambiguous) to be translated into concrete terms" (Kagan, 1990, p. 419).

Others have questioned the usefulness of the framework because of the difficulty in measuring its effectiveness. They claim its usefulness for teachers and researchers relies upon it being able to be measured (Bull & Bell, 2009). There are problems achieving this due to the fuzzy boundaries (Archambault & Crippen, 2009) between some of the domains. Archambault and Barnett (2010) went even further, questioning whether some of the domains even exist, stating that "the validity of the TPACK model is uncertain and measuring each of the domains is complicated and convoluted, potentially due to the notion that they are not separate" (p. 1656). This view is based on the research of Archambault and Crippen (2009) which found high correlations between TCK and TPK (.743), TPK and TPCK (.787) and TCK and TPCK (.733) (p. 80). As noted by Kimmons (2015) these high correlations "may cast doubt upon the notion that TCK, TPK and TCPK are in fact distinct domains" (p. 61).

In this thesis I will argue that TPACK appears to ignore what I consider to be the factor at the very core of the model, that being teacher identity as informed by teacher beliefs and expressed through narrative as described by Clandinin and

Connelly (1994). Whilst teacher identity is discussed in some detail later, a brief explanation is provided here to inform the reader of the various types of research that have been carried out in this field. The first aspect of the research into teacher identity:

> pertains to the antecedents of teacher identity research, e.g., research on teacher knowledge, teacher beliefs, professional development, and reflection. The second major aspect of teacher identity research involves an attempt to define teacher identity, focusing on the various conceptualizations and definitions of professional identity and professional roles. The third aspect investigates the relationships between teacher identity and teacher cognition, professional development, language learning experiences, and the role of emotions, respectively. (Bukor, 2011, p. 3)

A number of these aspects will be discussed in detail in section 5.1.

It is my contention that within the TPACK model, teacher belief needs to be included, as it is an important factor determining the implementation or otherwise of the TPACK model. As Ertmer and Ottenbreit-Leftwich (2010) explain, "it is essential that we provide our future teachers with solid evidence that technology-based, student-centered instruction can have a positive impact on students' learning and their achievements on standardized tests" (p. 268). It can be argued that providing teachers with evidence assists in developing beliefs and these beliefs form part of the basis of one's identity. This contention will be further explored in the analysis section of this thesis.

This need for evidence holds true for in-service teachers as well, and several points immediately come to mind. In-service teachers have had much longer to develop beliefs based on their experience so may be more entrenched in their way of thinking and acting in the classroom. As noted by Pajares (1992), beliefs that are formed early in life remain virtually unchanged as they are very resistant to change regardless of time, experiences and education. Of course, these beliefs are the result of many influences. Belland expands on Bourdieu's 1979 theory of habitus which attributes the disposition to do something to one's 'life conditions'; such factors as socio-economic status as a child, schooling, parental occupations when growing up and so on. Belland (2009) explains teacher habitus as being similar to Bruner's folk pedagogies, in that much of what teachers and pre-service teachers unconsciously 'know' about teaching comes from "years of experience as students and teachers" (p. 357). He argues that many teachers come into the profession having been subjected to "teacher directed classrooms where technology was not integrated" (p. 357). Belland concludes that it is therefore not unreasonable to observe or expect that they "enter teacher education programs with teacher directed folk pedagogies and folk beliefs that technology is not needed to help students to learn" (p. 357). A different perspective to some of these ideas and the Pedagogic Content Knowledge of Shulman, is brought to light in this study, due in part to the somewhat unique methodological approach taken in this thesis to this field of study. These perspectives will become clearer as the reader progresses and appreciates the approach take.

This leads back to the notion that it is useful to provide evidence to help alter teacher beliefs, and in turn, classroom practices. The basic premise of habitus may render in-service teachers as more of a challenge to convince of the merits of the TPACK model, as years of experiencing teaching and learning in traditional formats normalizes those approaches for the teacher. This strengthens the argument of this thesis that there appears to be some type of relationship between beliefs and the TPACK framework that this study explored. Another point worth considering is that given the emphasis of the current Australian education landscape to espouse the virtues of standardized tests, many teachers would be looking for classroom practice that will have a positive impact on students' results in such tests. In such instances, falling back on 'tried and tested' or traditional teaching methodologies may be a safer and more convenient option.

Much has been written about how teachers change assumptions or beliefs. Section 5.1 deals with some of the theory surrounding the whole notion of change; however, a brief look at some of the literature is provided here as it is relevant to this section as well. Stenhouse (1984) emphatically states that:

> Only the teacher can change the teacher. You can reorganise schools yet teachers can still remain as they were. You can pull down the walls and make an open school; but open teaching remains an achievement of the teacher's art, and an achievement that is an expression of understanding. (p. 50)

He goes on to explain that "as a starting point teachers must want to change, rather than others wanting to change them" (p. 50). This strengthens the earlier

argument that if you are able provide evidence to teachers that pedagogic or curricula change is necessary, then they may elect to do so – but ultimately it will be up to them. Argyris and Schön (1978, 1996) support this view, stating that learning and therefore change within an organisation occurs when members of the organisation have their views, actions and evaluations explicitly available or embedded within the models that the organisation espouses. In other words, teacher beliefs and practices need to be valued and promoted by the school if they want other teachers to follow suit.

Hofer and Harris (2010, March) challenge schools and eLI's in particular, by stating that what is needed is help to assist teachers in planning for successful technology integration, which is 'grounded' in the TPACK framework "and is based primarily upon their students' curriculum based learning needs, our emerging understandings of how teachers plan for instruction and the contextual restraints teachers face daily on the classroom" (Hofer & Harris, 2010, March, p. 296). Hofer and Harris together with several other academics have come up with a number of Learning Activities Taxonomies (LATs). Their focus is to help "teachers to better integrate technologies in their teaching [by] directly linking students' content-related learning needs with particular content-based learning activities and related educational technologies that will best support the activities' successful implementation" (Harris, Grandgenett, & Hofer, 2010, March, p. 575). Their hope is that by providing these LATs "as teachers select learning activities (to match content goals, student needs and preferences, and pedagogical/contextual realities) they are concomitantly and authentically learning to integrate educational technologies into their instructional planning"

(Harris et al., 2010, p. 576). An alternate approach to achieve this is offered by one participant in a study, who stated, "It would be great if all schools had a tech teacher to coordinate lessons with the classroom teacher. I believe then technology would be best integrated into the curriculum" (Bauer & Kenton, 2005, p. 540).

3.5 The Contextual, Cognitive and Affective Factors for ICT Integration

Whilst teachers will not be the main focus of this study, it is important to identify the context in which ICT development can become successful. Chapter 4 will introduce to the reader the approach taken by a number of schools to try to deliver the context issues raised above as well as the cognitive and affective factors discussed below. A more detailed discussion also occurs in Chapter 9 related directly to the TPACK framework and the contextual influences surrounding it. For now, however, the thesis will continue to concentrate on informing the reader of various factors affecting ICT integration.

Ertmer and Ottenbreit-Leftwich identify and group the many integration needs of teachers. In their 2013 paper, they divided these needs into three groups: contextual factors, cognitive factors and affective factors. These are useful when one is trying to encapsulate the myriad of needs that exist in the realm of ICT use in the classroom. Contextual factors include things like access to resources, the ICT systems that are present in the institution, curriculum materials (both digital and traditional), as well as support structures that are in place, including peer,

technical and administrative support. Ertmer and Ottenbreit-Leftwich (2013) pointed out that "context is probably the easiest factor for systems to address as it involves increasing resources and support" (p. 179). They identified five features of schools that successfully dealt with contextual issues:

> 1) having ample technology resources, 2) focusing on changing pedagogy with technology, 3) developing teachers' skills with authentic contexts, 4) providing support, and 5) providing opportunities for teachers to discuss problems with peers and facilitators and explore solutions over time. (p. 179)

Their second grouping, cognitive factors, includes "teachers' knowledge and skills related to technology – enabled learning" (p. 179). They discuss the notion of teachers being able to use technology in such a way that it supports student – centred instruction. As one of the participants in their study pointed out, "you have to know what you are doing and you have to be willing to put in the effort it takes to learn it. Knowledge is king" (Barnes in Ertmer & Ottenbreit-Leftwich, 2013, p. 179). Again, the authors offer us five essential cognitive components as suggested by Polly and Hannafin (2010) that, if present, can lead to change: "focus on student learning, teacher-ownership, emphasis on developing knowledge of content and pedagogies, ongoing and reflective" (Ertmer & Ottenbreit-Leftwich, 2013, p. 179).

The final grouping of Ertmer and Ottenbreit-Leftwich, affective factors, also looks at the teacher but this time the focus is on the teachers' beliefs. They identify two beliefs as being the most important affective factors, teacher beliefs about

teaching and learning and beliefs about the value of technology-enabled learning. They believe that these factors are crucial considerations, especially when change is sought from the school administration. They argue that it is more important for a school system to encourage change by "aligning the school's culture and overall vision with one that incorporates technology-enabled learning" (p. 180). By the school administration doing this and sharing that vision it is more likely that teachers will "adopt the same vision and subsequently … implement it effectively" (p. 179). This argument will be developed further in the following chapters when the administration's decisions are analysed in more depth.

3.6 Delivering the Knowledge

Researchers such as Howland et al. (2012) have developed a good understanding of the needs teachers have in order to implement technological and pedagogical change in the classroom, through models such as TPACK and classifications such as the contextual, cognitive and affective approach discussed in section 3.5. Two questions remain, that is, how to deliver all of this knowledge to teachers and once they have this knowledge how to use the technology effectively in the classroom. One of the purposes of this study is to try to answer those questions through the lens of ICT Coordinators and seeing how they go about providing for their staff, the necessary knowledge and innovative or creative ideas to use the technology effectively. According to Howland et al. (2012) the primary objective needs to be to help teachers "adopt new teaching practices and new methods for managing their classrooms" (p. 273) and she notes that this will necessarily be at the expense of "outmoded and ineffective methods of teaching" (p. 273).

3.7 One Approach – Cross Curricular Classes

The cross curricular classroom is one approach that may afford the expertise, time, inbuilt professional development, and opportunities that teachers need to successfully integrate ICT into their pedagogy. A classroom that is staffed by a subject teacher and an ICT teacher at all times provides a number of advantages, not least of which is the obvious increase in available hours that is afforded to teachers participating in such a model, allowing increased time to practise and observe effective ICT integration. This approach fits in well with Belland's (2009) habitus argument as pedagogic action "about constructivism and technology integration must (a) be of longer duration and integrated into content methods courses [and] (b) incorporate modelling of effective technology integration" (Belland, 2009, p. 359).

Zhao and Cziko (2001) claim even though teachers may totally accept new definitions of teaching that include sustained use of ICT "they may be unable to implement [them] without concrete examples of what this looks like. Therefore, examples become an important strategy to facilitate both teacher knowledge and belief change" (Zhao and Cziko, 2001 cited in Ertmer & Ottenbreit-Leftwich, 2010, p. 277). Ertmer and Ottenbreit-Leftwich go on to state that "effective professional development will emphasize technology uses that directly align with teachers' existing PCK knowledge" (2010, p. 273).

Somekh (2008) further lends support to the notion of cross curricular classrooms. She observes that it is important for teachers to be given

opportunities to experiment and to succeed, adding "schools can support this initiative by creating a culture that allows teachers to try out new practices, while making technological and pedagogical support readily available" (cited in Ertmer & Ottenbreit-Leftwich, 2010, p. 277). Ertmer (2005) also observes that "teachers' practices are unlikely to change without some exposure to what teaching actually looks like when it is being done differently"(Ertmer, 2005, p. 34).

If cross curricular classes are implemented with one of the classes being ICT based, and having an ICT teacher then the other class teacher may benefit greatly. Mueller, Wood, Willoughby, Ross and Specht (2008) claim it is "positive experiences with computers in the classroom context that build a teacher's belief in computer technology and confidence in its potential as an instructional tool" (p. 1533). As an extended amount of time is needed to realize a positive change in teacher confidence (Brinkerhoff, 2006) then the positive influence of an ICT teacher, technical support being on hand at all times, modelling of best practice and time to play and experiment should result in an increase in ICT integration by teachers exposed to such an environment.

Of course, other approaches can be taken to help teachers to integrate ICT. Problem Based Learning (PBL) is one such approach, as is the Flipped Classroom. Both these approaches see technology used in a supportive rather than a central role. The focus becomes the pedagogy, rather than the tool, which is used to help implement it. A study carried out by Walker et al. (2012) illustrates this point. In this study, they found that combining the PBL approach with a simultaneous opportunity to learn about the technology, resulted in the teachers adapting to

the PBL model becoming much more knowledgeable about PBL and much more likely to use it as a classroom practice. This study will look at some of these models in depth in a later chapter. Two questions are immediately raised;

- How do teachers approach these challenges and what support is out there to help teachers integrate ICT into their classroom practices?
- Does ICT integration necessitate pedagogic change, or is the reverse true?

These questions will be covered in subsequent chapters.

This chapter has highlighted some of the challenges facing teachers in being able to effectively integrate ICT into their classrooms. This has included a discussion of teacher beliefs and how they can prove to be a barrier to integration. The chapter has also highlighted a number of factors which can lead to successful ICT integration, as well as a more in-depth focus on exactly what teachers may need for this integration to occur. The chapter also introduced the TPACK framework, something that teachers may not ever need to consider, but which will become important as the analysis of this study unfolds. The factors were also considered from another perspective which included cognitive, contextual and affective considerations.

Suggestions for approaches were also described in some detail, highlighting, perhaps only implicitly, the connectedness between ICT integration and pedagogic change. This connection will be explored in more detail in later chapters. The chapter has 'set the scene' for the reader. Now that the reader has some idea of the challenges that are facing the teacher, she should be in a position where she is wondering how this integration could possibly be easily achieved.

It is time to shift focus away from the teacher and their needs and introduce the 'champions' of this study, the ICT Coordinators and look at their changing role over time.

Chapter 4 eLearning Integrators and Pedagogical Change

4.1 The Early Years

This study focuses on the various roles that an eLearning Integrator undertakes in order to implement change in the use of technology in the classroom. This role has gone through various changes over time, as well as name changes and point of focus. When I started teaching in primary education in 1986, there was no such thing as an ICT coordinator at any of the four primary schools where I worked. These schools did have titles such as Religious Education Coordinator, but they certainly were not large enough to have a coordinator of any other syllabus area – no English, Mathematics or Science Coordinators for example. As there are typically no 'specialist' teachers in primary, apart from perhaps a Physical Education or Music teacher this is hardly surprising.

What the schools did have was a resource person – someone in charge of a specific subject, in particular the resources related to it. The mathematics resource person would be in charge of looking for great resources for helping to teach mathematics in a creative way. Sometimes, if they were particularly enthusiastic they would also read journal articles and perhaps go off on a Professional Development (PD) course or two over the year and report back at staff meetings as to what they discovered. There was no extra pay for this job and little or no time off to be the resource person. Given that, I worked with many great resource people whose generosity with time and wonderful ideas really helped a beginning teacher to be more creative in the classroom.

Given my interest in computers, I was the Computer Resource Person in the primary schools where I taught. I was never officially assigned this position; it was just assumed that I would be that person. This role required me to lug computers around the school to various classrooms, or help other staff loading programs onto a network of Microbees. I also helped with the decisions surrounding what software to purchase and trained staff in the use of various packages. As a beginning teacher, I was quite enthusiastic about computers and their use in the classroom, and so did not consider the role a burden at all.

4.2 A Man of Many Hats

By the time I took on a role as a Computer Teacher, I was introduced to my first Computer Coordinator, Mortimer, who would become my mentor and friend. This was in 1990 and Mort's role was to not only run the Computer Studies subject; he was also the Network Manager and ICT Coordinator (although the title did not exist as such at that time). This was typically seen as the role of the Computer Coordinator. Computers were permeating all aspects of society and it was generally accepted that they would play an ever-increasing role in education. To that end, Mort, like most in his position at that time, was an agent of change, that is, a person who was charged with the task of ensuring the perceived need for change within the school community transpires. It involved encouraging staff, demonstrating new techniques and/or pedagogies and generally becoming a champion of whatever the reform may be.

As Avidov-Ungar and Nagar (2015) explain when describing the process of change:

> the first critical stage is the stage in which those involved in the implementation understand the need for change … [however] differences may exist between various interested parties in their perception of the goals of the change, in their personal and organizational interests, and in their attitudes towards the desired nature of the change. [It is in this context they say, that] ICT instructors are a major and critical element to the success of the change (p. 164).

Avidov-Ungar and Nadar describe an ICT teacher instructor as "chosen to instruct other teachers in ICT [and who] is one with a professional–pedagogical authority to instruct" (p. 265). This is no small task and timing is very important. Elbaz-Luwisch and Clandinin (2007) state that "the change needs to arrive at a propitious moment, when the school is searching for something" (p. 20). Just because the school may be searching for change, it is no guarantee that all or even some of the teachers in the school are seeking the same thing. As Lawson and Comber (1999) put it, "The problem for many teachers in adapting to the use of IT in their work is that it demands change in attitudes, knowledge and classroom practice at the same time" (p. 42). This places teachers outside their comfort zone, outside of their realm of knowing.

The role that Mort had in 1990 is vastly different to the role that is required today. Becker (1994) found that "organized support for computer-using teachers in the form of staff development activities and a full-time staff member in the role of computer coordinator" (p. 279) were important factors in the creation of exemplary users of IT in the classroom. This view of the ICT coordinator as a role

model is echoed by Kortecamp and Croninger (1996) who called for a mentoring system to be in place so that when new technologies are being introduced, more experienced teachers could assist novices (not necessarily novices in education, but novices in IT) with the implementation of these new technologies in the classroom. This is not the same today as observed by Tondeur, Kershaw, Vanderlinde, and Van Braak (2013) when they begin their study into the 'black-box' of technology integration in education, by stating that "teachers are beginning to integrate technology into their classrooms … the use of technology during teaching and learning activities is steadily increasing" (Tondeur et al., 2013, p. 434). Perhaps this is due to the increasingly ubiquitous nature of technology. Considering the Apple Classrooms of Tomorrow research which described teachers' various levels of technology use, ranging from entry, adoption, adaption, right up to appropriation and invention (Dwyer, Ringstaff, Haymore, & Sandholtz, 1994), it is fair to assume that very few teachers are starting from an entry point level nowadays.

That is not to say that the ideas of Kortecamp and Croninger (1996) are now outdated and should be ignored. Newhouse (2010) argued that "the most effective professional learning strategy for teachers appears to be one-on-one support in the classroom" (p. 5). He expanded on this statement by suggesting that this can be achieved "by the curriculum ICT leader or through mechanisms such as teacher buddy and mentoring systems" (p. 5).

Nor is it the only approach being taken. In India, there is recognition that whilst ICT use in education has increased, "not much change has occurred in terms of

the pedagogic practices followed" (Murthy, Iyer, & Warriem, 2015). The Indian government has instigated a project called The Teach 10000 Teachers project. As a result of this Murthy et al. (2015) have developed a professional development program called Educational Technology for Engineering Teachers (ET4ET). The authors state that "the main objective of ET4ET is to prepare engineering college faculty across the country to implement ICT supported student-centric teaching strategies" (p. 17). Whilst this program is directed at pre-service engineering teachers, it highlights the point that at the tertiary level, the role of the ICT teacher / instructor is also being looked at critically in an attempt to increase meaningful pedagogic use of ICT within classrooms. It squarely places the role of improving ICT integration among educators, with the tertiary lecturer.

4.3 Agents of Change, Agents of Pedagogy

If we are to understand why teachers are still failing to show successful technology integration, then we need to look beyond the quantitative studies that tend to focus on resources, infrastructure and teacher attitudes towards the technology itself (Sang, Valcke, van Braak, & Tondeur, 2010). To support this notion of looking beyond the infrastructure and resources, Ertmer et al. (2012) state, "simply increasing computer access was not sufficient to change teachers' technology practices especially if this increased access was not accompanied by a corresponding shift in teachers' pedagogic beliefs" (p. 424). In recent years, studies have seen a shift in focus away from these commonalities and more towards looking at the deeper pedagogical changes that need to take place inside the classroom.

A study by Senjov-Makohon (2006) which focused on the relationship between pedagogy and practice, found that experienced teachers "valued interaction, [and] they preferred to actively 'do'. They valued collective and individual reflection about ICT activities and knowledge that were transferable into established practices" (Senjov-Makohon, 2006, p. 5). Tondeur et al. (2013) report on another study carried out by Hughes (2005) where it was found that the pedagogic capacity to "employ technology in innovative ways seemed to be affected by teachers' understandings of how technology could enhance learning outcomes" (p. 436). The focus has changed from merely having to know about how computers work and how to use certain applications, to pedagogical content knowledge combining with technology to enhance teaching and learning activities in creative and innovative ways.

This leads to the ICT Coordinator's role as necessarily changing focus to a TPACK perspective. The concept of technological, pedagogical and content knowledge (TPACK) as described elsewhere in this study, was developed by Mishra and Koehler (2006) to be a framework which would assist in the study of technology integration in the classroom. The basis of the framework is the idea that the integration of technology in a specific educational context "benefits from a careful alignment of content, pedagogy and the recognition of the opportunities which technology can provide" (Tondeur et al., 2013, p. 436).

So the ICT Coordinator becomes the eLearning Coordinator, the Integrator, the Digital Learning Coordinator, or as will be used in this study, the eLearning Integrator (eLI), with the focus of their role now squarely placed in the pedagogy

sphere, and in particular the role of agent for change in pedagogy. This is supported by studies which found that for technology to be used in the classroom, it is the beliefs that teachers bring into the classroom related to education itself that are often the overriding factor in integration (Hermans et al., 2008).

Back in the early to mid-1990's, the main emphasis on teaching with and about the use of computers was based around teaching applications to the students. The Syllabus for Year 9 and 10 Computing had an emphasis on the use of word processors, spreadsheets, databases and graphics tools with a little emphasis also given to communication tools. The Senior 2 Unit course was similar. This reflected a lot of thinking at the time that computers could be taught by looking at the main applications for which they are used in business. Behind the scenes, however, eager teachers were experimenting with bulletin boards and chat rooms, email and multimedia authoring tools. These other uses for the devices were slowly finding their way into some classrooms by early adopters.

Computer Coordinators and/or Network Managers (depending on the school budget) had the role of making sure that the computers worked throughout the campus and were there to help staff who wanted to use computers in their teaching. Initially there were very few takers interested in using the devices. However, by the end of that decade, many teachers were beginning to see the benefits of using the devices for administrative as well as classroom use. As SMART Boards came on the scene and projectors appeared in more and more classrooms, the use of a computer to present information to students became

commonplace. Computer coordinators morphed into ICT Coordinators shortly thereafter and the focus shifted from teaching about computers to teaching with computers.

Many ICT Coordinators saw that their focus during the late 90's and early 2000's was to help other teachers to integrate computer use into the various curricula. At the same time, and perhaps due largely to this shift, computer class numbers dwindled, as students got their digital fix in art, or mathematics or the social sciences. Computers were not seen so much as a subject but rather as a way to help teach a subject. This meant that their use became much more authentic as the students started using the devices in a similar way to people employed in various fields out in the real world.

4.4 Bringing Teachers into the Fold – Creating Necessity

In the early 2000's many schools started using computers for administrative tasks that teachers would normally do on paper. Reports started to be created via computer, rolls started to be marked using a computer, teaching programs were created using computers (and had been for quite a few years) and could be edited and regurgitated year after year with little thought beyond changing the header to say 2001 rather than 2000. Along with this came an expectation that teachers could get ready access to devices when needed. It was the role of the ICT coordinator to make sure that there was an available bank of computers ready for staff use. They were also charged with the responsibility of understanding the administration packages that the school purchased, such as Oasis, and training staff on their use.

The advent of the internet and especially the evolution into Web 2.0 saw ICT use in classrooms increase even more. Early adopters of the interactive internet demanded access for their students and ICT Coordinators found themselves championing social media, experimenting with platforms such as Second Life, dabbling in Twitter and testing out how to use Facebook and its predecessor, Myspace. This was also the time that saw the increased use of Learning Management Systems (LMS's). Moodle, Edumate and Blackboard were tools that the ICT Coordinators provided in-servicing in, built servers for and spruiked as the way that teachers could deliver their increasingly overcrowded curricula to the 'digital natives'. Teachers were increasingly using the devices for research and planning lessons, and schools were providing a device for each teacher to achieve their digital goals.

The advent of wireless technology saw the ability for ICT coordinators to provide network access to teachers and students anywhere on campus, without the need to plug in the computer. Suddenly, it was feasible for a group of students to carry a device from class to class, using it to take notes, research, read the eBook, or anything else the creative teacher could think of to do to make learning more fun, more interesting and more authentic. The injection of the tablet into the consumer market helped make having a device for each student more affordable and attainable. ICT Coordinators now had to delve into the world of apps rather than programs, touch screens rather than keyboards and battery life.

The Promised Land had finally arrived. Always connected was a way of life; Bring Your Own Device (BYOD) meant that students could access curriculum materials via their tablet, phablet, phone or laptop. If the school desktop machine was not good enough or didn't have the software that the students required, then they could bring their devices in from home which did provide all they required. Computer labs started to disappear, as every classroom was now a computer lab. The technology became so reliable and so 'normal' in everyday life that the ICT Coordinator no longer needed to be a 'tech-head'. School expectations saw students bringing a device to school each day, fully charged and ready to use in any lesson demanding ICT use. 'Hot' devices were available for the miscreant who forgot to charge their PLD, or who had theirs trampled and the screen cracked whilst waiting in the tuck-shop line.

4.5 Where to From Here?

So what now for the eLearning Integrators? The infrastructure is available, the students have ready access to the devices, the LMS and Social Media systems are in place and ready to provide teachers with content space and societal expectations are such that any education institution that is not going down this path is going down the wrong path. The ICT Coordinator role has morphed again. Their focus now is "learning with ICT as a major goal in an attempt to facilitate innovative pedagogical practices in a systematic widespread model, rather than ICT integration in general" (Albion, Tondeur, Forkosh-Baruch, & Peeraer, 2015, p. 668). ICT integration has occurred. Teachers are facing a class full of students who have a device on their desk and quite probably another in their pocket. The ICT integrator is now a champion of pedagogical reform. I emailed a fellow ICT

Coordinator who went through University with me. His opening line as we had not communicated in about 5 years was “Still at my school but I am Head of ICT Integration now, so more interested in pedagogy than the technical stuff” (Liseo, Personal Communication, 2016).

ICT Coordinators, Integrators, eLearning Coordinators, eLearning Integrators—regardless of their label, they are now true agents of change. They are using and advocating disruptive technology, but not to disrupt the way that students take notes, read their texts or research. They are using the technology to disrupt the way that teachers teach. As agents of change, they are advocating social constructivist ideologies, they are pushing flipped classrooms, project based learning, problem a day timetables and operating in shared learning spaces, and open plan learning areas. Everything is in place for them, or soon will be. The technology is available, but they may still need to break down a few barriers to get to where they want to be. The question is, will the teachers follow?

Chapter 5 The What and Why of Narrative Inquiry

The what and why of Narrative Inquiry were the questions I asked several years ago when my supervisor suggested it. What I found was a way of thinking about my doctorate and how I should be approaching it that finally made sense. I was planning to study a particular group of teachers who were given the task of bringing other teachers into the 21st century with regard to their use of ICT. I was studying people, with all their nuances, fears, pressures, subjectivity and passion. I was bringing to the study my own biases, my world view, my perceptions and attitudes and my experiences. This could not be a double blind trial, nor a study, which reduced teachers' opinions, beliefs and experiences down to a set of numbers which could be plotted nicely on a scatter graph.

I needed a methodology that took into account all of these similar and disparate factors yet still allowed me to report my findings honestly and effectively. I needed to be able to take into account the interactions of the participants with others, report on their own past experiences and what they were experiencing now as well as how they saw their future selves and what they would be doing. Also I could not ignore the context they were placed in – their situations brought about by factors such as the institutions they worked in, the pressures of societal and departmental expectations, and the administrations they had to work with. Narrative Inquiry has provided me with the methodology that I needed in order to take on this challenge. In the following pages I will situate my study in the context of Narrative Inquiry, providing the reader with an understanding of the what and why of this approach.

5.1 Teacher Identity as a Catalyst for Change

In order to fully understand why teachers make the choices that they do and operate in the way that they do, it is important to take into account the professional identity of the teacher. As Stenberg (2011) points out, “There is agreement in educational studies that teachers' perceptions of their own professional identity affect their professional actions, their commitment to their work as well as their ability and willingness to cope with educational change” (p. 25). In fact, Stenberg argues that good teaching requires that the teacher needs to be aware of the source of his classroom practice decisions and she lists these sources as being values, beliefs and understandings.

If we consider other factors that influence choices that teachers make, there is no doubt that organizational arrangements and social norms figure amongst the most influential. However, Spillane (2000) saw the influences as more complex than just the situations teachers find themselves in. Spillane argued that, “What and how teachers learn is also shaped by and situated in their identities, both as teachers and as learners” (Spillane, 2000, p. 2). This is not to trivialize the role such factors play in shaping a teacher’s identity: “Context has an essential role in teacher identity; contextual features, such as school environment, historical, political and cultural factors shape and form teacher identity” (Stenberg, 2011, p. 14). As such, identifying and studying teacher identity is a crucial factor in understanding why teachers choose to adopt or not adopt ICT as part of their pedagogy. As Johnson (2003) states, “A teacher’s sense of his or herself influences every new skill, expectation, social context, new question and relationships with others” (p. 788).

Identity has been described as being constructed from three perspectives, "narratives that persons tell about themselves (first-person identity), identifying narratives told to the identified person (second-person identity), and narratives told about the identified person by a third party to a third party (third person identity) (Richmond, Juzwik, & Steele, 2011, p. 3). Appreciating teacher identity is more complicated than just relying on what is said by or about an individual teacher. Such things as relationships, situations, environments, moods, hopes, desires and moral disposition, shape identity. It is important to recognize the dynamic nature of teacher identity, rather than treating it as something fixed or static (Clandinin, Pushor, & Orr, 2007; Richmond et al., 2011). There also needs to be the recognition of the interlacing between identity as a central factor in ICT uptake and the second "commonplace" of narrative inquiry methodology, sociality, which emphasizes the necessity to consider such personal conditions as "feelings, hopes, desires, aesthetic reactions, and moral dispositions" (Connelly & Clandinin, 2006, p. 480) of both the participants and the inquirer.

5.2 Using Narrative to Inform Teacher Identity

The observations of Wozney, Venkatesh and Abrami (2006) are particularly relevant to the focus on ICT. They observed that "missing from the literature, however, are investigations, which apply broad motivational frameworks for examining the relationship between teachers' beliefs and computer technology and their classroom practice" (p. 177). According to Bruner (1985) there are two modes of cognitive functioning, these being paradigmatic and narrative. The paradigmatic form guides empirical findings, logical proofs and good theories and it is used to explain the physical world. The narrative form, however,

operates at the human experience level, describing emotions, intentions and beliefs. It leads to authentic historical accounts.

Garcia and Rossiter (2010, March) attribute narrative to the basic structure of human meaning-making and state that if we accept that learning has something to do with making meaning, then, "it seems clear that narrative methods are not only appropriate but necessary to foster learning" (p. 261). Sparkes and Smith (2008) support this view stating, "epistemologically, narratives have emerged as both a way of telling about our lives and as a method or means of knowing" (p. 295). Narratives help to link one's experiences with objectives or goals, a view supported by Polkinghorne (2005) when he states that "narrative cognition refers to an understanding of human actions which may be seen as a result of an individual's earlier experiences, present and future aims and purposes" (p. 78). As Stenberg (2011) asserts:

> One form of studying teacher identity is through discourses – teacher identity is a multiple and changing formation which is essentially related to the social, cultural and political context – the focus is on the structures that teachers are embedded in. (p. 13)

These factors lead one to conclude that a possible way to accurately characterize teacher identity and teacher beliefs is through the use of teacher narratives. As this thesis is about change in ICT use and a large part of change revolves around education or re-education, Narrative Inquiry comes forward as an obvious choice of research methodology. As Craig (2011) asserts, "because teacher education is inextricably linked to teachers' lives and narrative inquiry studies lives in motion,

the link between teacher education and narrative inquiry could not be stronger" (p. 20). Elbaz-Luwisch and Clandinin (2007) extend this idea by stating that "understanding teaching requires that we pay attention to teachers … listening to their voices and the stories they tell about their work and their lives" (p. 359). Connelly and Clandinin (1990) succinctly put the view that "education and educational research is the construction and reconstruction of personal and social stories, learners, teachers and researchers are storytellers and characters in their own and others' stories" (p. 2).

This study focuses on the lives of eLearning Integrators, all teachers, who naturally fit within these parameters. Their role, at least in part, is to educate their peers, to teach the teachers how to use ICT in their classrooms. By delving into their stories, I hope to "bring theoretical ideas about the nature of human life as lived to bear on educational experience as lived" (Connelly & Clandinin, 1990, p. 3). By choosing the narrative approach I will be able to lend voice to those participating in the study taking into account what Hogan (1988) and Noddings (1986) highlighted as necessities: time, relationship, space and voice in order to establish a collaborative relationship – one which gives the participants voice, but also provides an instrument for my voice as researcher to be heard (in Connelly & Clandinin, 1990).

An essential part of Narrative Research when studying people, and in particular teachers in their professional environment, is to wrap the research in context. Clandinin, Connelly, and Craig (1995) call this the professional knowledge landscape and they explain "a landscape metaphor … allows us to talk about

space, place and time…. Because we see the professional knowledge landscape as composed of relationships among people, places and things, we see it as both an intellectual and moral landscape" (p. 5). People cannot be studied in isolation and their narratives are not experienced in isolation. There are many factors which interact to create the stories that are our lives and our lived experiences that shape us as professionals and influence what we do and the beliefs we hold. In fact, as Craig (2011) observed, "as Clandinin and Connelly's narrative inquiries unfolded over time, they moved from narratively accounting for teacher knowledge, to narratively accounting for the context in which teachers come to know" (p. 25).

5.3 Teachers as Curriculum or Pedagogy Makers

Please note that in the United States much of the literature uses the terms pedagogy and curriculum interchangeably. The reader is encouraged to think of pedagogy when they read the term curriculum in the following sections.

This idea of how teachers come to know was extended by Kitchen (2011) who saw teachers as curriculum makers "who draw on their own personal practical knowledge to inform their professional practices" (p. 45). This echoes the central view of Connelly and Clandinin (1988) on understanding curriculum described when they state, "we believe that it is teachers' 'personal knowledge' that determines all matters of significance relative to the planned conduct of classrooms. So personal knowledge is the key term" (p. 4). They base this in the much older writings of Dewey (1938) and his theory of experience. Others have also discussed how teachers come to know about curriculum. Ciuffetelli Parker,

Pushor, and Kitchen (2011) state that "curriculum is experienced in situations and that people have experiences which are, by nature, made up of and surrounded by people and the environment" (p. 7).

Ciuffetelli Parker et al. (2011) go on to state that the core of education itself is based upon "one's personal lived experience – school experiences and outside of school experiences" (p. 7). They advise that as teachers we need to be awake to who we are so that we can gain understanding into our own practices and why we do them when we step into a classroom. It is through "knowing that our history, our family, the place we are from all comes with us and shapes what we do in the classroom and why we do it" (p. 11). This, they say, is how we as teachers get to fully understand what it is that we do in the classroom and why we are doing it – "to understand curriculum … is to understand yourself" (p. 7). This notion of curriculum is further extended when they refer to Pusher who, in her work as a teacher educator, when reflecting on curriculum of lives, stated that when discussing curriculum to teacher candidates, she would introduce them to Schwab's (1978) curriculum conception, "as comprised of the commonplaces of student, teacher, milieu and subject matter" (p. 11).

5.4 Using Narrative Inquiry to Inform Teacher Education

This leads to the viewpoint that when considering teacher education and from where it should start, the launching point should not be "what theoreticians, researchers and policy makers know, but rather with what … teachers know and have found in professional practice" (Clandinin, 2000, p. 29). As the teachers are the curriculum makers then, the focus of education of pre- and in-service

teachers should start with them, their experiences and beliefs. This may be explained through what Eisner (1988) calls the primacy of teachers' experiences. If the education of pre- and in-service teachers is to be authentic, then the teachers' primacy needs to be honoured. Other considerations that have often informed the tactics, strategies, techniques and rules, based on the beliefs of the above-mentioned theoreticians, researchers and policy makers, are purposely avoided (Connelly & Clandinin, 2000; Craig, 2011).

Whilst this study looks at the narratives of four teachers, they are all in a position where they are given the task of informing, encouraging and educating their peers. As such, the current concept of teacher knowledge, "that of a codified script detailing what teachers must know and do…. [where] knowledge is a possession dictated, controlled and tested by others" (Craig, 2011, p. 22) needs to be replaced. Using the Narrative model, teacher education needs to begin from a place of "narrative understanding of teacher knowledge based on meaning constructed over time" (p. 22). They called this personal practical knowledge and described it in further detail as "a kind of knowledge carved out of, and shaped by, situations; knowledge that is constructed and reconstructed as we live out our stories and retell and relive them through the process of reflection" (Clandinin, 1992, p. 125).

Whether the purpose of a study is to understand where teachers base their beliefs and actions in the classroom, or as in this study, where educators charged with the task of teaching teachers, formulate their practices, a narrative inquiry approach to the study can be regarded as an appropriate option. As Elbaz-

Luwisch and Clandinin (2007) state when describing how to understand teaching, it "requires that we pay attention to teachers both as individuals and as a group, listening to their voices and the stories they tell about their work and their lives" (p. 5). They went on to describe that the process of understanding the actions of teachers and the thoughts of teachers should not be taken as "two clearly distinct phenomena or events that make up the work of teaching, but as interconnected and complementary sides of the unified experience of the teacher" (p. 7).

Like others, Elbaz-Luwisch and Clandinin (2007) argue that whilst there is certainly a need to focus on the teacher and their personal understandings, that cannot be done in isolation. There needs to be a corresponding consideration of the context in which the teacher is plying her craft. They expand on this argument stating that one needs to look at the "embeddedness of the teacher in a school and school system and its mandated curricula, pedagogical trends, and reform processes need to be taken into account" (p. 6). Sleeter (2001) describes this necessity very well by arguing that narrative research "situates teacher education experiences in the life of a teacher educator … [enabling] teacher educators to connect strategies or observations with examined life experiences and to communicate emotions" (p. 238).

5.5 The Role of Researcher in Narrative Inquiry

My role in bringing about an insight into the storied lives of those ICT Coordinators who are involved in this study is vastly different from the role I would have taken on in a more conventional thesis approach. Statistics and their

analysis are not what is underpinning this research. Rather it is the inferences and conclusions that I draw from reading and rereading the interviews, emails, responses to questions and observations that have been documented and finding patterns, creating knowledge and perhaps insights into the roles that the participants have taken on. My task is to make a narrative from the story lived, to describe the lives from the stories, anecdotes and responses collected (Connelly & Clandinin, 1990).

In order to achieve this, I need to be part of what Elbow (1986) describes as the believing game. This approach calls upon me as researcher to insert myself into the story that the observed is living. This has to be a cooperative, collaborative action, as without the acceptance of the participant, I could not truly come to understand their story, let alone write about it. In this approach, "The central event is the act of affirming or entering into someone's thinking or perceiving" (Elbow, 1986, p. 289). Throughout the collection phase of this research, I continually found myself affirming the beliefs of the participants. The result of all of this will hopefully be ideas that are worthy for other to entertain, as Peshkin (1985) noted, "…not necessarily as truth, let alone Truth, but as positions about the nature and meaning of a phenomenon that may fit their sensibilities and shape their thinking about their own inquiries" (p. 280).

Of course, there are many risks in taking this approach to researching a phenomenon. What may strike me as relevant and insightful may not be that way to the reader. As Connelly and Clandinin (1990) describe it, "a heartfelt record of events in one's life, or research account of a life, does not guarantee significance,

meaning and purpose" (p. 9). It becomes an act of juggling or best fit to determine the truly significant meaning from what is observed. So too it is a juggling act of me as researcher, as teacher, as theory builder, as research participant myself, as narrator and commentator (Connelly & Clandinin, 1990). I need to be aware of my own voice and the various roles that I am playing in this endeavour. The voices that I have may cause tension within the research task. As Pinnegar and Hamilton (2011) describe it, "alternative plotlines for knowing and research bump against each other as competing and conflicting stories of research" (p. 48). These plotlines and tensions are not just related to me as researcher, but also to the wider field of research itself. Due to there being opposing methodologies being championed as the best approach to take with humanistic research, the research field is in conflict. As researcher I have to be aware of the competing plotlines of epistemology – "the plotline of knowing grounded in modernist epistemology as the use of quantitative technology to assert truth [which] lies in tension with a plotline of knowing grounded more firmly in concern with ontology as living alongside to make meaning" (Pinnegar & Hamilton, 2011, p. 48). For me as researcher this means that by choosing the narrative plotline, I am valuing the "particular and the contingent" (p. 51) as a way to communicate my understanding of what I have learnt from the research.

True to the whole notion of teacher educator researcher, I find myself through this study and through inserting into the storied lives of others, to be "simultaneously narrator, character and actor, in the midst of living the research we are most interested in studying" (Pinnegar & Hamilton, 2011, p. 64). However, it is more than just how I view my various roles and myself. It is about the

participants and providing them with voice. However, the risk here is whether I actually achieve providing them with real voice. As observed by Elbaz-Luwisch and Clandinin (2007), in formal settings teachers tend to tell cover stories and censor their own story. They "talk about their practice in the public forum in ways that accord with the official perspective, while inside their classrooms or in relationships of trust with researchers, they tell stories in ways that express their personal understandings of the experiences and relationships lived out in their classrooms" (Elbaz-Luwisch & Clandinin, 2007, p. 367). In hindsight, I have been able to gain their trust and am able to report upon their real voice, and as researcher, I needed to be able to achieve this using an approach which attenuated to that goal. My thesis in essence is about change and how that change is enacted. In order to report on this I have accepted that the "understanding of school change and how it can be brought about has been pursued most fruitfully through narrative inquiry" (Elbaz-Luwisch & Clandinin, 2007, p. 367). This I believe is due to the observation that it "enables teacher educators to connect strategies or observations with examined life experiences and to communicate emotions" (Sleeter, 2001, p. 238).

I do, however, need to be mindful that, as in many narrative research undertakings, there can be no doubt that there is a real risk that I will be limited in that the amount of collaboration that actually unfolds is minimal and that I will be "confined to doing no harm" (Elbaz-Luwisch & Clandinin, 2007, p. 374). I am also acutely aware that the teachers who I have selected for this study may just be "satisfied with minimal involvement in the research process" (p. 374), due to the many other pressures that they are under.

5.6 Challenges to Narrative Inquiry

It would not be fair nor wise to conclude this explanation of Narrative Inquiry and how it fits in so well to this study of ICT Coordinators without at least outlining some of the challenges that the approach has had in being recognized as a legitimate mode of study. As already mentioned, Bruner (1985) identified two forms of scholarship, the narrative and paradigmatic models. He saw that neither is a superior method, but rather asserted that both are necessary as ways of gaining knowledge about the human sciences (Pinnegar & Hamilton, 2011). Not all share his views and there is an amount of criticism of the narrative method particularly by those in the paradigmatic camp. However, not all the challenges mentioned are thrown up by members of that philosophy. As in all areas of academia, there needs to be continual challenges asked of us, not only by our critics, but perhaps more importantly also by our most strident supporters. This is how scholarship improves.

In this age of publish or perish, many researchers and academics are under enormous pressure to get their name in print, often. Craig (2011) identifies "conservative institutional review boards, journal editors with dogmatic understanding of evidence/transparency, research peers who consider the approach under-theorized, and those who routinely equate relationship with research contamination" (p. 33) as significant challenges to researchers who are trying to survive the publish or perish mindset, yet who want to use a Narrative Inquiry approach to their studies. Proponents of the Narrative Inquiry approach hope to get beyond the impediments listed above and realize their goal that

"through the process of peer review and publication what others might have labelled as merely story becomes research" (Pinnegar & Hamilton, 2011, p. 45).

I am among those proponents. I wish to avoid what Ciuffetelli Parker et al. (2011) observed whilst two of them were at a conference in which "narrative inquiry methodology was criticized for focussing more on personal stories than on improving practice" (p. 5). I need to identify the pitfalls associated with Narrative Inquiry and hopefully by identifying them I will be a step closer to avoiding them in my study. Such pitfalls include what Drake et al. (2001) caution against through relying solely on traditional belief interviews as teachers' claimed beliefs "do not match the beliefs that are observed as part of the teacher's practice" (p. 3). This is echoed by Harris, Grandgennett, and Hofer (2010, March) when they state, "Teachers' stated pedagogical beliefs do not always align with their instructional practices" (p. 324).

New indicators of teacher beliefs are needed which recognize that such beliefs have developed over time and form a coherent system. For example, "Life story interviews may represent a theoretical and methodological step in that direction" (Drake et al., 2001, p. 3). However, more than one investigative method can prove beneficial. Judson (2006) uses two tools – one to investigate teacher beliefs and attitudes, and one to investigate constructivist teaching practices. Similarly, research into ICT use could also adopt this multiple tool methodology. Further, data collected using just one methodology "should be complemented with other data collection methodologies to overcome the often

reported difficulties of all self-report instruments" (Albion et al., 2010, March, p. 309).

Taking all this into consideration, I believe that a Narrative Inquiry approach is appropriate for this study. It allows me to report on the values, beliefs and understandings of the participants whilst capturing a glimpse of the passion, fears, pressures, nuances and biases that will no doubt become apparent. Reporting in this way will allow me to focus on the teacher identities and make meaning from the storied lives they have willingly allowed me to share. It will be through these identities and narratives that I will be able to come to some understanding of why teachers do what they do with ICT in their classroom practice. Narrative Inquiry will also provide the means through which I will be able to identify the eLI's multi-faceted role in encouraging ICT use in schools.

Chapter 6 Methodology

6.1 Introduction

In order to bring together the various elements of this study that have been mentioned so far, this chapter will deal with the methodologies that were employed to take this study from a collection of stories to a rigorous study. This chapter will describe the context of the study and the participants in some detail. It will look at the decisions made when determining the approach followed and underlying theories that support the methods chosen. The study is about a special type of teacher – the computer coordinator, or ICT Coordinator, also known as the eLearning Coordinator and even Integrator. As already stated, for the purposes of this study I will use the term eLearning Integrator (eLI) to encompass all the various titles that my participants have been given over the years. eLI is useful as it can be applied to technology as well as pedagogy. I will begin by describing the questions on which this study was based.

6.2 Research Questions

Four questions have persisted throughout the length of this study. They have been written and rewritten in various ways as the study progressed, however, the truth that they were getting at has never wavered. In their final iteration, they are as follows:

1. How, if at all, are eLearning Integrators' storied identities related to their perceptions of ICT for learning and teaching?

2. How are eLearning Integrators' storied identities related to the TPACK framework?
3. How, if at all, do eLearning Integrators' storied identities influence their support of teachers' adoption of ICT for learning and teaching?
4. How can knowledge of eLearning Integrators' storied identities be used to guide them in supporting teachers' adoption of ICT for learning and teaching?

These questions have focused my attention within this study and have shaped the relationships that I have developed with each of the four participants. They have in a sense given voice to me as a researcher, allowing me to insert myself into the stories of others and giving focus to the narrative that follows. Whilst none of these questions was asked of the participants directly, it was hoped that through the interviews, observations and written correspondence the answers to these questions would become apparent.

By analysing the narratives that each participant supplied over the length of the study, the findings as discussed in later chapters will have a clear basis or entry point. The four questions seek to encourage rich and meaningful dialogue between researcher and eLI which will also provide several focus areas that will help to guide the study and inform the reader. These focus areas include eLI's previous experiences and perceptions and how they inform their perceptions of the role of ICT in pedagogy, the TPACK framework and what effect it has on eLI's carrying out their duties, include eLI's previous experiences and perceptions and how they inform their day to day decisions and interactions and whether

knowledge of eLI's narratives are useful in helping to guide and inform eLi's in carrying out their duties.

6.3 Selecting the Participants

In order to begin to answer the questions described above I needed to be able to work with people with whom I could gain understanding and minimise cover stories (Clandinin & Connelly, 2000). Therefore I needed to create a rapport with the participants so that their real point of view was clearly audible in the stories that they told (Fontana & Frey, 2000).

I needed to be able to create a relationship of collaboration where I as the researcher and the participants would "work together to achieve the shared goal of understanding" (Rubin & Rubin, 1995, p. 11). To achieve this goal, I did as suggested by Maxwell (2005) who described the notion of purposeful sampling techniques. Maxwell describes it as "a strategy in which particular settings, persons, or events are selected deliberately in order to provide important information that can't be gotten from other choices" (Maxwell, 2005, p. 88).

Four participants were chosen. Table 6.1 lists the participants and the reasons why they were selected

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Table 6.1
Summary of participants

Name	Age	Reason Selected
Sharon	Mid 30's	Is the Integrator at a systemic Catholic High school that is regarded as 'cutting edge' with regard to technology and pedagogy. I wanted the study to include a school where there was an obvious and overt push towards pedagogical and technological change.
Steve	Early 40's	Is the Integrator in a State High school split across three campuses. I wanted the study to include what was occurring in a typical comprehensive high school. I also wanted to include a school that was co-educational.
Clarke	Early 50's	Is the Integrator in a Private School catering for girls between Kindergarten and Year 12. I wanted the study to include a school that would be regarded as technologically rich and also a school that catered for the education of girls, to try balancing out the two boys only schools in the study.
Ned	40	Is the Integrator in a non-Systemic Catholic High School that caters for boys from Year 5 to Year 12. It is a mid-range school as far as fees are concerned. I wanted the study to include a school catering for boys from the non- systemic sector and also one which had a lot of happy practitioners of traditional teaching methods.

Through the selection of these participants I was able to capture data that pertained to primary and secondary situations, single sex as well as co-educational schools in public as well as private settings. I was also able to work with eLI's in settings that, as far as infrastructure and support goes, ranged from fair to extremely well resourced. From a teacher attitude perspective, the participants' settings ranged from more traditional pedagogy trying to incorporate ICT, through to 'cutting edge' both in technology use and pedagogy practice. What was most important with this group of eLI's was that I would be working with people actively involved in the process of integrating ICT into the

teaching practices of staff who could show an authentic, timely and relevant view of the phenomena surrounding implementation.

Also important was the need to keep the participants anonymous. To this end pseudonyms have been used for all the characters except the author. The schools have not been identified and their location and make-up have been left sufficiently vague to ensure that the school, participants and other actors in the thesis cannot be identified.

6.4 Why a Qualitative Study?

When deciding to take on this study, there were many challenges and questions that I was asked to provide answers to, not least of which related to the chosen methodology of the study – how was I going to go about collecting the data I needed in order to answer the questions mentioned at the beginning of this chapter. What theoretical basis was I going to use to ensure that my data met the rigors of academic standards and my final account similarly met the standards expected of Doctoral study. In order to answer these questions, I relied heavily on my supervising professors and the research literature. The methodology described is a confluence of their support and challenging questions to me combined with my evolving interest in qualitative research methods through reading many journal articles offering advice and a scaffold upon which to build my thesis.

From the outset, this was going to be a research activity. As described by Sharp and Howard (1983) research is "[s]eeking through methodological processes to add to one's own body of knowledge, and to that of others, by the discovery of non-trivial facts and insights" (p. 6). As my job has been and still is that of eLearning Integrator, I was certainly aiming to add to my personal body of knowledge. Anything that could help me do my job better I would consider relevant, timely and necessary. Adding to the body of knowledge of others placed a great deal more pressure on the decisions that I needed to take in order to validate the research as rigorous and legitimate. In order for this to occur I needed to perform a "systematic investigation to find answers to a particular problem" (Burns, 1997, p. 2).

I decided early on, perhaps even during my Masters work, that I was more comfortable with a qualitative study approach as I was dealing with the social sciences and interested in peoples' lived experiences in context when actioning their role. The research was to take place in the world of others, with me as an invited guest. I was aware that as Denzin and Lincoln (1994) state, "qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meaning people bring to them" (p. 2). I was guided by the desire to draw out and analyse the experiences of others, so this experiential study would rely upon the back-and-forth between the stories that I collected and the phenomenology surrounding ICT integration in Educational settings. It was also necessary to elicit responses from multiple perspectives so that the phenomena of what was being studied could be better interpreted and understood.

This interaction has been described by Marton (1977) as "the empirical study of the differing ways in which people experience, perceive, apprehend, understand or conceptualise various phenomena in, and aspects of, the world around them" (p. 97). Being able to determine what the data that I collected was actually saying, required me to make sense of it, to interpret it and to seek clarification from my interpretations of what I observed and the experiences and stories that I captured. Thus an interpretivist paradigm was also essential in order for me as researcher to be able to understand "the complex world of lived experience from the point of view of those who live it" (Schwandt, 1994, p. 118). Interpretivist studies rely heavily on what Rubin and Rubin (1995) and others describe as rich descriptions of the phenomena in order to develop an empathetic understanding of the world of others – the world I was intruding upon and trying to make meaning from (Maxwell, 2005; Rubin & Rubin, 1995, p. 35). To achieve this I needed to, as much as possible, be a part of that world, bearing in mind that to be authentic the participants needed to be "interviewed with open-ended questions in places and under conditions that are comfortable for and familiar to them" (Patton, 2002, p. 39).

Therefore, as the reader can already surmise, this study was going to need to draw together a number of methodologies in order to placate the rigors of academic study. The study all at once needed to be an empirically based qualitative study, allowing for interpretivist actions to make sense of phenomenological and experiential behaviours and beliefs, all in the context of

someone else's backyard. As Clandinin and Connelly (1998) point out, "experience is messy and so is experiential research" (p. 159).

6.5 Narrative Inquiry

Narrative Inquiry has already been described in some detail in Chapter 5 as it was chosen as the main methodological approach that this study has used. As such, this section will not go into the minutiae of the approach, but rather reiterate some of the main points in order to provide clarification as to its suitability for this study. As it is a study in human perceptions and undertakings, a good place to start is by pointing out, as Clandinin and Connelly (1994) state, it is "both the phenomenon and the method of social sciences" (p. 416). We all live storied lives, making sense of the world around us through the stories that we tell, the anecdotes that we pass on related to the experiences and thoughts that we have. In order to study humans and the actions and beliefs that they hold, it is therefore logical to study the phenomena with the very tools that are employed to describe and relate our experiences first hand. It is a little like 'fight fire with fire' (Smokey Bear, 1967) – study storied lives using a narrative methodology.

This study will stray a little from some authors' views on Narrative Inquiry. For example, Kramp (2004) stated that it is through the stories of the participants rather than through the researchers' observations that the voices of the participants become clear. This study relies on both observation and the stories of the participants, because as researcher, I cannot extract myself from what researchers do in the process of working with others. I do observe, I do make inferences, draw conclusions, and look for subtle signs via body language, tone,

and expression to help build a rich description of the phenomena that I am observing.

To be true to the basic tenets of Narrative Inquiry I will be structuring my study based around the three commonplaces of time, place and personal-social dimensions (Connelly & Clandinin, 2000). These dimensions are useful in providing a framework for commonalities among the participants of the study. Temporality is important as stories are built around the now, combined with future anticipated events and past events that have led to this point – the point at which I join the participant's story. As narrative is partly dictated by the commonplace of temporality, the study needs to take into account that "in narrative inquiry it is important to always try to understand people, places and events as in process, as always in transition" (Clandinin et al., 2007, p. 23). In order for the research to claim validity, the participants should not be viewed as having a static disposition towards ICT integration and how to achieve it (something inherently implied if their views are taken at a single point in time). Rather, the thesis presents a developing understanding of the ways to help teachers with ICT inclusion that is, by necessity, viewed and analysed over time.

The two other commonplaces are important considerations when structuring the methodology of the study or more specifically determining the dimensions of the inquiry space. Narrative Inquiry needs to account for the individual as well as the social context in which they find themselves. Whilst it is sometimes easy to identify the feelings and hopes from a participant, it is as important to view those internal conditions in the context of the existential conditions that the participant

is immersed in – the relationships that they have with others in the context of the phenomena being studied. Sociality, which is a combination of personal conditions and social conditions enacting on those involved in the study is of equal importance to temporality. In this sense personal sociality conditions such as "feelings, hopes, desires, aesthetic reactions and moral dispositions" (Connelly & Clandinin, 2006, p. 480) need to be considered – not just for the participants, but also for the inquirer. Similarly the authors include both participant and inquirer when describing the social conditions as including "existential conditions, the environment, surrounding factors and forces, people and otherwise, that form each individual's context" (Clandinin et al., 2007, p. 23).

This leads to the third commonality simply called place. Experiences that people have happen in specific locations – either one or a series of locations and these give place its grounding. Place can also be interpreted to include what is going on in the 'greater' place, the Education community, the public arena, society in general, thus providing some overlap with the Social – Personal commonplace. Place is described by Connelly and Clandinin (2006) as "the specific concrete, physical and topological boundaries of place or sequence of places where the inquiry or events take place" (p. 480). The methodology will be structured in such a way as to allow for the three commonplaces described above to be articulated at each stage of the study, in order to better describe not only the fluidity of a narrative, but also enable the researcher to draw conclusions based on the evolution of those commonplaces. This will result in what the researcher intends to be "a narrative view extended over time, shaped by personal and social

conditions and situated, correspondingly, in a multiplicity of places" (Clandinin et al., 2007, p. 26)

Another important aspect of Narrative Inquiry that will be a part of this study is the 'toing and froing' of what I take out of the interviews, observations and written texts of the participants together with their reactions to how I have perceived them. Meaning drawn from data that I gather and interpret will need to be presented to the participants in order for them to be able to give true voice to the study and its findings. This will provide a structure supporting the conversation between the participant and the researcher and fill the void between the story lived and the narrative interpreted. As Anderson (1999) explains, this collaboration is necessary as it allows researcher and participant to "connect with each other … [and] … be involved in constructing knowledge" (p. 66).

The final point about Narrative Inquiry that I want to make here surrounds the type of narrative inquiry that will take place. Polkinghorne (1995) describes two significant types of narrative inquiry analysis. Paradigmatic Analysis moves from a collection of stories to the creation of general concepts via identification of common themes or elements that can be identified within each of the stories collected. The second type of analysis is referred to as Narrative Analysis, using the storyline or plot to help tie together the experiences captured in the data and provide a context within which the meaning can be interpreted. As expected, Polkinghorne determined that both types of analysis can make "important contributions to the body of social science knowledge" (p. 21).

This thesis will make use of both types of analysis. The analysis is necessary in order to move from the field texts to the research text. In order to explore the phenomena of experience using the stories of the participants (Clandinin & Connelly, 2000, p. 128), it is necessary to read and reread the transcribed interviews, observations, and other writings that make up the data. I need to code the text in order to determine the similarities and differences between what the participants are saying or not saying, as the case may be.

6.6 Collecting the Data

The data for this thesis were collected over around 18 months upon my return to Australia from the Middle East, and the final observations were conducted just prior to my departure for China to take up an eLearning Integrator position in an International School in Shanghai. I met with each of the participants on a number of occasions over the course of those months and corresponded with them via email when I needed clarification about things that they may have said, or which I observed whilst with them. I did not always meet them at their schools. With Sharon, we met at school quite often, but also found ourselves having meetings in coffee shops by the sea and even in her home. Ned and I met at his school quite regularly, but also chose to hold long discussions over a beer at a pub near his school. The same is true for Steve. Similarly, Clarke and I usually met at his school, although we did have reason for convenience to also meet at a pub close to where we were both located.

As a researcher, I was concerned with meeting in places like hotels and coffee shops; however, as it turned out this is where I collected some of the most valuable data. In a sense I think I expanded on the idea from Denzin and Lincoln (1994) of 'natural setting', whereby they meant within the school and more specifically within the classroom, by expanding it and reinterpreting it to mean the comfortable locations where the participants were most likely to share their stories with me. Whilst often this was at school, the work environment was exactly that, and work often intruded into our shared time. If that intrusion was ICT based then it was welcome; however, that was not always the case and on a number of occasions planned meetings had to be abandoned midway through due to the other work responsibilities of the participants.

Initially I had a series of about 20 questions that I wanted to ask the participants in order to extract their stories (see appendix 1). I sent these questions through to each of the participants prior to my first meeting with each. It was obvious that each had read them as their responses came out with hardly any prompting. I needed these questions to allow me to order my thinking, to structure in my mind what I was trying to study and how I was going to go about getting responses that related to my research questions. As Chase (2003) stated, creating a list of questions first allows the researcher "to be open to a wide range of stories [that] the interviewee may tell and it helps them to know what in general they want to hear about" (p. 83). Subsequent interviews and observations had no formal structure to them at all, although there were specific questions I wrote down that I wanted to ask. I found this a better approach to use in order to get the stories that I was after – the lived experiences of the participants which shaped their

beliefs about how to get teachers to integrate ICT rather than just their opinions. This lack of an agenda as to what to expect also led to me becoming less of an influence in developing their storied identities. The focus I needed was to be able to listen well and ask questions that came from what they were saying rather than from what I planned to hear.

Perhaps the most rewarding part of the data collection process and the interviews in particular was the ease with which I gained the trust of the participants. I think that being an educator who is passionately interested in the whole process of integrating ICT into pedagogy, I came across as genuinely interested in what the participants were doing – because I was! At the time when most of the data collection took place I had no official role as ICT Coordinator or Integrator. Previously and subsequently, I have had those roles, but at the time, I was simply a Computing teacher. I could relate to what they were saying and often found myself finishing their sentences (a practice I purposefully tried to discontinue) because I shared with them common experiences and common beliefs. Through building up this rapport with the four participants we were able to "work together to achieve the shared goal of understanding" (Rubin & Rubin, 1995, p. 11)

The interviews were nearly all taped. One of the participants, Clarke was initially averse to being recorded. I reassured him that he would remain anonymous; however, he felt more comfortable in responding to my initial questions by reflecting on them and writing detailed responses. Often the interviews would turn into observations as the participant was called upon to work with a staff

member or student. This thesis will not discriminate between nor quantify the type or number of each data collection method as it would add unnecessary data whilst providing no additional insights or unique relevance.

The transcribing of all of the interviews was done personally. It gave me a chance to "get a feel for the cumulative data as a whole" (Patton, 2002, p. 441). Whilst it was a time consuming activity it was necessary in order for me to become immersed in the data. It also meant that I was being true to my word and ensuring anonymity by not giving any third parties access to the participants' real names or real schools.

The final data were collected via email once I had analysed the field texts and sent back my summaries and conclusions for the participants to read. This was necessary as I was no longer able to meet with the participants in person, yet I had to be able to present my findings about them to them in order to make sure that it was their voice coming through the narratives rather than my own.

6.7 Putting it All Together

It is anticipated that through the use of these differing narrative points of view, there will not be a seamless coherent single narrative as the endpoint of the study. Rather there will be a series of narratives made up of "contested trajectories comprising multiple-often conflicting-narrative accounts" (Richmond et al., 2011, p. 5). It is through the analysis of these conflicting accounts that the study may provide insight into how Integrators go about encouraging ICT incorporation into classroom practice. The narrative, therefore

can be seen as the vehicle through which "a sequence of events in time that are told from a particular point of view and that construct an interpretation of those events" (p. 5) is told.

With regard to the interviews, once transcribed, they were analysed initially in order to identify general themes that recur. This also occurred with the classroom observation data collected via field notes and recordings. This occurred independently at first, concentrating on the data sources separately. Once completed, the data were analysed to determine connections between data sources. This analysis was informed and driven by the themes derived from the classroom observation data and interviews. I believe that this approach best informed the results of the study, and led to a valid treatment of the research questions.

The data was read and reread in order to identify themes, both common and unique. Each identified theme was then handwritten onto large sheets of paper (2 to 4 A3 pages stuck together) as column headings. The data were inserted into the columns – sometimes being inserted into 2 or more as it crossed several of the themes. Initially this took place separately for each participant. All that data was then collated onto larger paper, so that I could get a picture of what was unique and what was common between two or more of the participants. Each participant's view or experience was colour coded and a location system was used to be able to easily find quotations for later write up. Writing up findings became fairly straight forward from this point as a number of common themes became immediately apparent, whilst other themes could be identified as being

unique to a participant and due to their particular circumstances, due to unique commonplaces, due to their storied identity or to a combination of these factors.

I also continued collecting data long after I felt I had enough data to begin writing. As Connelly and Clandinin (1990) observed, "narrative methodologies often require further discussion with participants, such that data is collected until the final document is completed" (p. 7). Determining what data to choose to include in the study from all that was collected was another factor that I needed to consider. I was looking for data that contained the characteristics of apparency, verisimilitude and transferability. Together with this, as with any good narrative I needed to be mindful of structuring the narrative using conventional literary constructs. At the forefront of this I needed to be aware that such constructs would include the usual elements such as characters, themes, and plots as well as other more subtle tools like irony and foreshadowing (Connelly & Clandinin, 1990). The authors observe that time and place are also intertwined with the plot stating, "Time and place, plot and scene, work together to create the experiential quality of narrative" (p. 8). This collaborative nature of narrative is not just limited to time and place, plot and scene. They report "merely listening, recording, and fostering participant story telling was both impossible … and unsatisfying. We learnt that we, too, needed to tell our stories. Scribes we were not; story tellers and story livers we were" (p. 8).

I hope to be able to identify the various procedures, beliefs, systems and underpinning theories that the ICT Coordinators are adopting in order to help teachers to incorporate Information Technology use in the classroom. I will do

this through carefully identifying the data worthy of being reported on. I will identify the trends or common themes, placing them within constructs such as themes and plots. Also I will not being afraid to share my own narrative with the participants and the anticipated audience. As Richmond et al. (2011) observe, as I am a constructor of the narrative along with the participants and other teachers and staff that I met along the way. I need to be aware that I will bring particular stances to the narrative, for example my strong belief in ICT as a tool for positive change in education. As such I need to also point out that similarly to what Richmond et al. (2011) did in their paper, I will not pretend to be an unbiased participant. I see acceptance of my role as an influential participant in the study as an important positive aspect of narrative study and not something that should be avoided. Impartiality would lessen the reliability of the study. As Webster and Mertova (2007) explain, "reliability from an empirical point of view is concerned with a result that is applicable across samples, whereas reliability for narrative relates to the experience of individuals" (p. 93). It is important that I relate my experience of the study, as experience is at the heart of narrative research.

This is of course only part of what needs to be considered when evaluating the reliability and validity of data presented from a narrative study. As Webster and Mertova (2007) state, "multiple interpretations are valid and [that] the real test of validity of any research should ultimately be done by those who read it" (p. 92). It is my role, as Huberman (1995) points out, to be able to demonstrate "rigorous methods of reading and interpreting that would enable other researchers to track down" (Huberman cited in Webster & Mertova, 2007, p. 92) my conclusions. Huberman continues "… then reliability, in terms of access and

honesty can be achieved" (p. 92). Prior to Huberman's contentions, Polkinghorne (1988) addressed this same issue, stating that, "Reliability usually refers to the dependability of the data and validity to the strength of the analysis … attention has been directed to the trustworthiness of field notes and transcriptions of interviews" (p. 176).

This chapter has informed the reader as to the methodology that was used in this research. The four questions that the research intends to answer have been outlined as have the reasons for undertaking a qualitative study. The reader has also been provided with an extended discussion about the Narrative Inquiry approach that has been selected. The methods surrounding the collection of the data, including the proposed timeframe and main collection techniques have been outlined. The planned approach as to how to put all the data together after the collection process has concluded has been discussed. The four participants have been introduced together with some brief details about them. Chapter 7 will expand on the participants in much more detail.

Chapter 7 Meet the Characters

In order to do justice to each of the participants in the study, this chapter will spend some time introducing each of them to the reader, complete with their opinions, anecdotes and sometimes extensive quotations so as to describe them in the most accurate way that I am able. In each case, the participant will be described from the point of view of the three commonplaces of temporality, place and personal/social dimensions. In order to be able to do this each interview was analysed and the narratives were broken up into either being mainly about time, about place or about personal dimensions. I say mainly because as I went through this process it quickly became quite evident that the rich narratives that I was afforded were a combination of the above commonplaces and it was difficult to determine where one could draw boundaries when the stories were so inextricably linked by place, and time and personality.

A feature of this chapter and the subsequent one is that each of the participants has their own font assigned to them. The theory behind this technique is that it will allow the reader to quickly identify that the words are those of the participant. In the next chapter the use of different fonts for each participant is particularly useful in allowing the reader to keep track of who is saying what.

7.1 Sharon

Sharon found her interest in computers during her teenage years at school. She had attended a state high school but school was not particularly enjoyable for her, with her twice retelling the story of how her hair had been set alight in the

classroom when in Year 9. No deeper discussion took place between us about this, even when I prompted her in an email; however, it was plainly obvious that Sharon had been the victim of bullying. She did, however, find her passion in computers:

At school I thought I can do computers and then I really loved it. I did the common course which was software and IPT combined. There were six kids in my class and I was the only girl. When I was looking through the ATAR [Australian Tertiary Admission Rank] booklet I had no idea what to do and I thought I could do that. It wasn't my first choice but I sort of fell into it. We never had computers at home ever. I got my first computer when I went to Uni. My degree was a Bachelor of teaching and a bachelor of technology.

So it was TAS [Technical and Applied Studies] teaching and I was leaning towards food and textiles. And then when I had to pick my specialty I very clearly didn't want to go anywhere near food or textiles. Because I can't cook. I have taught food but the amount of preparation you need for food like ordering, like chopping up and all of the prep work.

My mum and dad were both in the textiles industry so then I was sort of leaning towards textiles and also I don't really like teaching girls either. I fit much better in a boys' environment.

I suppose the thing that led me most into computers was my dad was a real problem solver. He used to push us to solve puzzles and that's what I like about computing try this, if it doesn't work try this, if it doesn't work and you can always undo.

The above observations by Sharon bring a somewhat different perspective to the folk pedagogies and concept of habitus. Sharon 'bucked the trend' somewhat by electing to be the only girl in her computer class. She also chose to not going down the more traditional textile or food paths even though her parents were in those industries. Instead she identified one aspect of her upbringing – her fathers love for problem solving as the catalyst for her choosing this career. When asked about when she became interested in teaching staff about using computers in their curriculum areas, Sharon responded with the following couple of memories.

I like teaching I like teaching older kids and adults. When I started my degree I thought this'll be okay and then I really loved it. One thing that I started to do when I was working in the Sydney [central authority] I started looking at a similar thing. We're not really providing any in-servicing for people that are you know we're doing blogs and wikis and crap like that but we are not looking at in-servicing for people that are not already to that point.

Somebody asked me to do some of the night time in-services on things like Photoshop and Flash and all that sort of stuff. So that was teaching computer teachers. It's sort of evolved from teaching computer teachers Flash and then the next one was teaching Art teachers Flash. And Flash for English teachers and things like that. So trying to push other faculties into it. I only started teaching in 2000 so it was after that so it would've been 2002 2003.

... At another Catholic High School I was Peel coordinator - it's from Monash University. It's a program for enhancing effective learning. Basically it's putting effective learning into traditional teachers' Schools subjects and a

lot of what I did there was eLearning based. In that school there was a time allocation attached to it.

It has sort of died off over the last six years as I suppose people get more interested in what they're doing people are looking for that stuff everywhere now it's to the point in teaching where everybody's looking for something to do to make changes in their classroom.

Sharon began teaching at her current school in 2007. In order to understand the position that Sharon is in, and has been in over the years at her current school, the commonplace of place needs to be discussed in some depth. The school is a comprehensive private High School in Western Sydney. The school is certainly atypical of other schools in the area, and more to the point atypical of High Schools in Australia. Demographically it is typical of the area, but pedagogically it is very different from nearly all schools in the country.

In Years 7 – 10 there is a Project Based Learning model in place. Some subjects also double up so students may be in a combined Science/English class or a combined Computing/Religion class with 2 classroom teachers and 60 students typically broken up into about 12 groups of 5 students. The classroom spaces are very large to house such big numbers of students. Learning areas also have break out sections for small to medium group work, and each area has enough laptop computers, housed in charging trolleys, to provide a 1 to 1 environment. All years in the school also have iPads using a parent funded model where the school provides the software and the parents purchase a particular model iPad.

In Year 11 the school follows a Problem-a-Day model where students spend the whole day on a problem in a particular subject. By the end of the day it is expected that the students will have something tangible to show for their days' work. The next day the boys will follow a similar approach but in a different subject area. This works for the entire teaching cycle except for 1 day where each subject has a much shorter 50 minute period with the students. This time is used to perhaps introduce the next problem, or tidy up any loose ends from the previous 'problematic'.

Year 12 students follow a third pedagogy – that of a flipped classroom approach to learning, where students are introduced to, and cover much of, the theory on their own at home via short video tutorials, short readings, textbook work and so on. Class time is dedicated to looking at the theory in practice, refining skills and concepts learnt and discussing questions that the theory raised. Throughout the entire school, the timetable is run on three 100 minute periods, except for 1 day in the cycle where each period time is halved allowing for a six period day.

From a technology perspective the school is very well resourced. As Sharon explains:

Our school doesn't do budgets. The theory that our business manager has is that if you have a budget you spend to it and then it ends up being more expensive so basically you ask if you need stuff and I've never once been turned away. I've never once been told you do not need that so I shudder to think how much I've spent on the technology this year. The front office just got redone and there was $80,000 of technology put into the front

office. I just got an invoice signed off for $30,000 for new computers. I've never been rejected for buying stuff.

In 7, 8, 11 and 12 [this has since increased to all years except Year 10] we have one-to-one iPads that are parent funded. We buy the apps which cost us about $15,000 a year. There are generalist apps for every subject to be able to access so iMovie, we didn't go for word processors and stuff we went for creation type stuff so I've bought a PDF annotator Noteshelf - a decent one. It's probably more for note taking than word processing.

We have about 800 laptops in trolleys. In seven 8, 11 and 12 the main technology is their iPads. Nine and 10 are timetabled all the time in rooms with computers. So they are now in a base room and teachers go to those rooms. Art and music have a trolley of laptops, Science has a trolley of laptops with data loggers that can plug into them.

And then in the library we have four tanks of laptop Mac book pros that are high capacity. With the idea being that when 7, 8, 11 and 12 want to do proper computing stuff they can come to the library - so that is the centre of the decent technology. That is where our team are also based, so there is someone there that can be in the room helping you out for support and that sort of stuff.

We are very lucky in our school to get [central authority's] support. We've got dedicated fibre optic now and in terms of support from the principal I get what I want. He [the principal in charge] bought us a robot and the kids are calling it the 'Brobot'. Basically it's an iPad on a Segway and you can drive it remotely from another iPad. So the official line is that you can invite experts into your classroom and they can navigate around the classroom rather than being on the screen at the front of the room.

So I get what I want - my job in another school would not have my seemingly unlimited budget. I feel like I've got an unlimited budget like they're very generous. I'm not crazy with it - I must've spent over $150,000 this year.

This excerpt highlights the commonplace of place and what is going on at Sharon's school which the reader may be able to compare to their own current circumstances. However, not all of the decisions that have been made at the school related to technology have been in the best interests of spending money wisely or even in the best interests of the school operations. Sharon provided a number of examples of where money had been ill spent or systems put in place that were not up to standard or not in the best interests of the school's operation.

I'll give you an example. About a year ago we bought in 60 Macbooks and 60 iPads. We had some Federal money come in. And now we have 7, 8, 11 and 12 with their own iPads, so what are you going to do with the class set of iPads? We just don't need them anymore.

The next example has been due to the schools' [central authority] interfering in the ICT systems. Whilst [central authority] involvement in the school is unavoidable, the systems that they put in place can often negatively affect the way that the whole school can operate. The following examples clearly demonstrate this.

...And the [central authority] had been really bad this year we got a new wireless LANs controller which meant that every wireless access point in the school didn't work anymore. This was halfway through the year. They are upgrading all of their schools. We already had fibre optic and you

can't really go past that technology. So we didn't really need the upgrade. But they said "no no we are upgrading every school".
So we had that issue and then we also had a new rollover into Faces which is the new student tracking system. A new admin system. Instead of Denbeigh but it didn't work. So then we bought Central which did work. It's really good actually.

The [central authority] wanted to get rid of all file servers out of the schools and Denbeigh used Filemaker Pro. So when we rolled over to the end of the Denbeigh license we said we don't want to do that anymore we want to use Central. The [central authority] said you've already got Faces [attendance software]. And then it was like a six month argument. And all Faces does is attendance. It's been this big hype for five years and it does daily attendance really really well. But that is the only thing that it does really well. And is really good for enrolment because all of the enrolment data comes from the previous school. As long as it comes from the same system which most of our kids do. There are not many of our kids that come from different systems.

It's just been a major stuff up. It should not have happened in the middle of the year but that is when our Denbeigh [school management software] license ran out. So they were transferring all the data across and then they could not transfer all the data across.

The impact that systems that are not working correctly have on Sharon and the job that she and her team are trying to do is enormous. Another system issue that took place which directly impacted on the students and her time is described by Sharon as follows:

…And also we've had some trouble with our MDM [Mobile Device Management] A lot of Year 7's couldn't get the apps that we purchased and things like that so it's probably the technical support from the [central authority] has been pretty poor this year. They have had lots and lots of issues. There were no user accounts for Year 7's. We had IT staff back the week before school and then we were there for a couple of days before the kids came in and I sent home a letter to the kids the previous year saying login with this username install the profile on your iPad so that when you come to school it's all set up and ready to go and none of it was ready and they told us that it would be ready in December and it was ready like the second week of school.

Ivan's school [Sharon's husband who also works in a central authority school] were like 5 or 6 weeks in and the kids still didn't have user accounts. And no one could use the Internet which is fine if it's not a vital part of your pedagogy but for us "you got to buy an iPad you're going to be using it in class … by the way you can't get the Internet on it."

So there was just a bunch of stuff ups there was one kid in our school who didn't have a user account until week 8. We were ringing every day going what's going on. I think the problem was that there was a conflict between eSchool and Faces. And then the active directory is based on Faces. And Faces synchronizes with eSchool so what's happening is that the password field in Faces was empty so it synchronizes back to the Active Directory and that would log kids out. Because that password was not being recognized.

Denbeigh has been hell for us this year. That's been a massive drain on resources for the first five or six weeks because that wasn't working properly. We had IP'd [created static IP addresses for many devices like

printers, Wireless access points and so on] the whole school because the [central authority] had IP'd every school separately and they changed the way that our Wi-Fi was set up so that every school had the same system but the problem here is that all the IP's were conflicting. So we had to re-IP everything to a new range which initially we thought was fine because we don't have that much which has static IP's and then I think we'd underestimated how much had static IP's.

But the real problem was Denbeigh because there were multiple paths in the software that directed back to the server so they were all directing back to the old server. And then they duplicated all the student accounts when they rolled them all in. I think mainly it was seen as a [central authority] issue but still it took five weeks of our time when we could've been in classes doing stuff.

This excerpt highlights the interconnectedness of the three commonplaces of time, place and personal / social as the combination of factors discussed due to what was taking place at her location, at that time has been detrimental to the staff being able to work as expected, the students in being able to do the same and her own ability to fulfil her role. Sharon later expanded on how this system issue impacted on how she did her job as ICT Coordinator:

Basically yes there was no integration. I was trying to do the Maker Space there. Basically I was working late at night and then getting up in the morning. We spent the last eight weeks eating take away for dinner every night.

Another event at the school had an even more long-term effect on Sharon being able to perform her role of helping other teachers integrate ICT into their curriculum areas.

What happened is that about half way through the year one of our teachers left and I ended up picking up two classes, so I pretty much haven't been in a classroom for the last 6 months. It was difficult but what we looked at is that it was IT-VET [Information Technology - Vocation Education and Training] - the kids hadn't been well looked after in the last year and a half that the teacher had been there. So they didn't know much. They wanted an experienced teacher. They wanted the kids to feel that they were being looked after – not someone just casually going in. And I had an assistant principals load so in fairness I got the IT-VET.

Sharon did, however, demonstrate her glass half full approach to her role.

...kid 5th in the state! 6 Weeks of teaching! Whoa.

This mix of events that can be seen as a combination of place and time have certainly affected the other commonplace of personal/social in Sharon's beliefs. Because of her diverse roles she found herself being stretched in many directions at once. She described the issue in this way:

I think that mix of the network management I think is a real issue that's always going to be the problem because it's going to be the priority. The fact that the network works or doesn't work is always going to be prioritized. So there's always something in that, that is going to go wrong and that's going to take your time away from you.

Over the course of the time that I observed Sharon, her role changed several times. Again this brings insight into the effect that place and time can have on a teacher and their beliefs. When I first interviewed Sharon she described her role as:

My present role has been a year and a few months so at the moment I'm looking after ICT in terms of management of the network and also looking after the library staff. Prior to that I was in purely an eLearning position. That sort of got collapsed into eLearning and ICT management and the library all at the same time.

By the end of the study her role had changed considerably:

I was supposed to be looking after IT management, integration, the library and we spoke before about all the maker stuff in the library. That became really big. Basically they looked at it and realized that I was going to burn out with all those four things. The job is being split into 3 roles. The library stuff, the ICT stuff and the STEM [Science, Technology, Engineering and Mathematics] stuff.

Yes, so I am Innovation and STEM coordinator. The other thing that we are doing is running a 100-hour course in Year 7 next year in STEM and to go into Year 8 the year after.

When asked about her role as an integrator of technology moving forward her response reflected her focus on the evolution of the pedagogy surrounding ICT integration:

It's still up in the air as to whether that is my job or not. I know I am looking after STEM which to me is the next level of integration of stuff. I

still help people out and give them project ideas. I've not done the explicit mapping that I would have done in the past.

Another example of how Sharon's beliefs affected the environment she was working in and which is certainly a current trend that is beginning to gain the attention of school leaders in a number of schools is the way that the library was transformed over the course of the study. There were a number of factors that Sharon cited for this change, from the current clientele to the expectations of an increasingly connected society and the demands that they place on libraries. The transformation is in line with research like that of Sweeney (2005) who stated, "They are the Millennial generation and they make up the demographic tsunami that will permanently and irreversibly change the library and information landscape"(p. 165). Similarly her strategy reflects the recommendations of Rosenfeld, Gatten, Nalani Meulemans, and Carr (2013) who recommended that libraries need to reinvent themselves as a partner in learning and shift away from a service oriented role. Her beliefs were discussed in response to a question about who she liaises with on a regular basis.

In terms of liaising probably the HOD's [Heads of Department] are the points of contact in terms of discussing what needs are. And then obviously my team who this year are very good particularly on the IT side. I'd really like to get some more technology bases in the library -staff particularly, since their job is to drive learning rather than to manage the network. So I'd really like to see stuff that the IT department are supporting, for the library to start supporting as well.

This belief of Sharon's that there needed to be a change in the whole focus of the library was further described when she was questioned about hindrances to her doing her job:

The other problem I have is the Library staff because they're not entirely functional - in general. I think that the whole world is trying to find a place for Library staff. The problem is that they are not teacher librarians they are just support staff.

Boys don't read anymore unfortunately and probably all library staff need to be more digitally literate. They need to get with the times a little bit more digital. But then the staff that we have are not very technically proficient.

A lot of libraries around Australia are trying to get librarians with eLearning knowledge and at our school it's not really working. It is slowly being addressed through professional development and we have one leaving now and she's three days a week and we're replacing her with somebody that is more technically proficient.

And the main librarian is looking for another job at the moment.

This belief in the need for change did see the whole library at the school change its focus. A maker space was created within it and the tech staff relocated to that building to help the space become a focus for eLearning and innovation. As Sharon described the process:

...the sacrifice of the library staff for it and more IT savvy Library is really good because I think that I can do all the library stuff so it means that the library's become a technology library. I think that the library people

and libraries themselves are looking for a place because they're not really utilized very much anymore.
And you can't just be, you know, a place for books because that's just a storage cupboard. You got to offer something more than that and you gotta offer something that kids need. And that kids want. A couple of schools are going that way. I was talking to a lady whose library and IT are combining. I talk to Michelle from [another school] and they have combined the technology in the library too and [another school]. And it makes sense… I wanted to build a maker space there for a while.

This realized vision of Sharon's to change the Library into a resource that is relevant to the school community coincides with her beliefs surrounding the IT staff that she has at her disposal. Over the course of the study, Sharon often cited staffing issues as a real problem, which was sorted due to hiring people who fitted the vision of the school to become more constructionist. The following excerpt describes this well.

Probably my big picture this year is that last year we had a lot of staffing issues. And this year we have got some really good staff sorted. We've had a lot of staff movement in the last year and what I've got now as staff are people that are really passionate and interested in working with staff which is really good.

So we have got Julie who you just met who's thinking of becoming a teacher and then Jim who replaced the librarian he's thinking of becoming a teacher and then Nick who's from a family of teachers. They're really eager to work with kids and work with staff. And they've all got a different focus area so Jim has a bachelor of design and technology so what we're doing is deciding whether we are going to put in a fab lab – in the library so make a maker space. But we have hooked up a connection with Stanford

University who is going to help us like brand it as a Stanford process and supporting us then with stuff we can use in classes and things.

What we're trying to do is move from just making Digital Products to making physical Digital Products. So like robotics. So instead of making a video we're going to make a robot. So more programming. We are getting a laser cutter 3-D printer and that sort of stuff so kids will be building a 3-D model of the church - they'll actually make a 3-D model of the church. So more like TAS products.

To achieve this Sharon utilized the IT staff in a way very differently to the traditional education institution model for IT staff. She saw the role that they should play a lot differently to what most schools use the 'techies' for.

I think probably it was our hiring the right people for the job. There's really not that much network management stuff that goes on in a school anymore. Like our network is managed by the [central authority]. Here all the kids have iPads is not really much space for repairing stuff anymore. Like if the battery goes we take it back to Apple. Like with BYOD now you really don't have the need for as much IT staff.

The IT staff have got to become more library staff. The library staff have got to become more IT savvy. A few years ago that wasn't even in field of view. It is really only stuff we have just started.

Stanford University - what they're trying to do is put more Fab Labs around the world and then gather data from them to figure out what the learning outcomes are. Okay it's all the constructivist stuff you know. So that is a big thing but there's also like that's Jim's thing. And then Ned's doing lots of filming stuff and going to classes and filming and supporting that.

And then Julie is doing iPad stuff. So it's great that they're not just Network Managers. They are also supporting staff in classes. So that's the push at the moment.

When asked if there were any staff concerns surrounding the Tech people coming in and helping out with class work, Sharon explained that the approach that you take when dealing with teaching staff is important.

I always phrase it as oh would you like to have someone come in to help you? As opposed to this person's coming in. Normally their response is 'Oh yeah that's awesome'. Our staff are pretty good. I haven't had any rejections.

The Maker Space project and the relationship that the school began to develop with Stanford University highlights another focus of Sharon's, that being professional relationships with others who are similarly minded. In fact, at the school where Sharon works, it is an integral part of how the school operates. As Sharon explained later when asked how the link with Stanford was progressing

A link to Stanford – no not really. I feel that the school feels that it is necessary to attach yourself to a model, so that you don't get lost. Which is what we have done with New Tech.
It hasn't progressed at all because no one has been in charge of doing anything with that. We had planned to go to Stanford half way through the year and then we booked it too late and then there wasn't any spots.

The attachment to a 'current model' idea is not new to the school. They have very close links with three institutions, the New Tech High model of which the school

is the first outside of the United States to be considered a member. They also have close ties with the Buck Institute, also in the United States, as well as a Technological College in Singapore which the school used to model the Problem a Day pedagogy currently used with the Year 11 students. The school encourages staff to attend week-long or even longer, workshops at these three locations and funds as many as 10 or so staff at a time to attend such events.

Sharon's own personal practical knowledge is informed by many professional relationships that she has made with other educators both via these workshops and also as part of her ever changing role within the school. When initially asked about training she responded with:

There is a huge amount of PD. I've been overseas three times. I went to school in San Diego, High Tech High which was mind-blowingly awesome. And this may sound arrogant but our teaching and learning is better - our pedagogy is better. They have an amazing display of students learning so they're making physical products and displaying them so very constructivist and there's lots of physical stuff so they do.

This is only the start of her network of Professional Learning Communities [PLC's]. When asked about how she keeps up with current trends and theories, Sharon elaborated in this way:

So I do a lot of reading. Reading of academic papers flicking through the Internet. I twitter a lot, Facebook. A lot of the stuff comes from Pinterest or Twitter or people know that I'm interested and send me stuff. I send out stuff that I find for other people. I have a large network of professional learning teams.

I follow a couple of people on Twitter, for example, so Donna who is the library person at [one university] and Tanya who is the computing person at [another university]. So I guess the three of us have become part of a Professional Learning Community that's informal - but no formal contact.

When asked about how she is going to develop STEM which is a new challenge for Sharon due to the Principal being very focused on it, she described several ways that she called upon professional organisations to help in getting the program off the ground.

The curriculum … from my head. I think I have a fairly good idea - I did some work with the Board of Studies on this last year – there is an international focus on it. So the board is looking at how they can integrate that into syllabuses or how they can use the existing syllabuses to integrate it. So I've done some programming with them – I'm on the STEM consultative committee.

The Independent Schools Association – they do a lot with it. They provide funding to independent schools - $20,000 here, $10,000 there to do a STEM project. But it is just a project – they do programming or make whatever, and Trudy who is the STEM consultant for [another central authority] she has been really generous in terms of sharing everything with me. That was really good.

But we are trying to look at integrating it within certain subjects so the Year 10 standard maths this year are doing stuff with programming to teach them things like geometry.

We are looking at 4 or 5 projects for the whole year. The last one I want to do for the whole term is do the Google Science Fair. So Google sponsor you to run a science fair and students just choose what they want to do and present it at the end.

The CSIRO [Commonwealth Scientific and Industrial Research Organisation] are going to come out and judge it which is pretty cool and they were really eager too. We've also got ACU, Uni of Wollongong, Engineers Australia, The Warren Centre for Engineers- lots of people interested.

This use of Professional Learning Communities is also something that Sharon tries to impart as good practice for the other staff at her school. When talking about her role in working with large groups rather than individuals she said:

At the end of the term I'm doing 'How do you use social networks to grow your professional learning.' Which is how I get a lot of my professional learning anyway.

Sharon's approach to the incorporation of STEM at her school serves to introduce the last component of this introduction, that of problems that she faces that are not technical in nature (as these have been discussed in some detail already). One of the striking aspects about Sharon's approach to her role is her candid discussion of major issues as she sees them, and her reaction to, and professional disposition regarding, some of the more difficult aspects of her job. With regard to STEM she sees some glaring deficiencies:

I think one of the weak points is when I have scoped for this year, as far as chemistry and biology goes there is not a lot of that in next year. My bias is obviously towards TAS so that encompasses some of the physics

stuff and the maths stuff as well. But then there is a weakness in bio [biology] and chem [chemistry], but, maybe next year we will look at that.

As Sharon is in charge of STEM, this is an issue that she will have to address as the students move into Year 8. Issues surrounding other aspects of her job were also identified quite often over the course of the study. One issue in particular was her problem with finding 'the next big thing'. There were a number of reasons why this is a particular problem for her at the school she is at. Possibly the main reason has to do with the school's focus on innovative teaching and learning. According to Sharon:

I suppose people get more interested in what they're doing people are looking for that stuff everywhere now it's to the point in teaching where everybody's looking for something to do to make changes in their classroom. I think it's all around the world if you look at project-based learning its pops up in America in the Netherlands in Australia there's some schools in China doing stuff it's all sort of in this time period.

Kids have changed so much so holy crap what are we going to do!

I've seen lots and lots of change in kids in that time. So the biggest change is kids changing and us having to adapt. And trying to bring teachers along with that.

This gradual change in focus from the way we always have done it to how can we do it better is not in and of itself a problem. At Sharon's school the problem manifests itself in several ways. In particular, the problem that new staff to the school have in coming to terms with what is transpiring around them can be an issue.

The teachers find some free advertising supported app online and they're like oh let's do this but we keep having to come back to the school provided services, because all the free ones are advertising supported and we can't control what advertising comes up and then we can't control the export.

The apps that we've purchased for them have all been decided because they can be implemented in Echo, we can open them in Echo and all that sort of stuff. You can publish them as PDFs. But teachers are going in with like 'Oh I heard about an app through Teach Me or at an in-service but we've actually bought a better option and they're causing themselves all these problems because they're not following the party line with the software.
I think it's a good thing because staff are looking for other stuff and I think that if there's a better option then take it but I think probably what's happened is that those staff haven't been around when we've decided to do that.

It's the same with PBL you know. The staff are blindly following the ideas without understanding why we are doing stuff. And then they don't go back to why when we are looking at stuff.

Another way that the change to how can we do things better in the school has manifested in a problem for the staff as a whole and Sharon in particular is as Sharon describes, when asked about some of the obstacles to her role:

I think we are very lucky in that our staff are very good. I suppose there is just maintaining so that the kids don't get bored. Providing new project type things. We have kids coming through that six years ago, their brothers did the Images of Jesus Project.

It's like the TAS pencil box. Everybody makes a pencil box. And then when you get home you got six pencil boxes with six kids. It's that sort of thing making it different from year to year but still similar enough to have teachers not have to reskill every year. You need to be flexible enough in your programs to be flexible on the ground where you can change stuff as you go.

I think what was happening was because we started with 9 and 10 first, year 7 and 8 teachers would rip off what the 9 and 10 projects were. Because we redesign the projects every year they look back and see what the other kids have done.
How do we keep the projects interesting without them becoming repeated each year? So Karen has this awesome new infographic project for Year 9 science. But then this morning Year 8 students were printing out infographics projects. How do you make it something different for Year 9. So the problem is how do you roll along with the technology rather than just pushing out the same project.

This issue of students repeating projects year upon year has to some degree been lessened with the latest push by the school community to become more constructionist and create actual artefacts that can be put on display.

Because there is a lot more public display of their work, the teachers realize 'hang on they have done that in Year 9' now, and they have to push themselves to do other things. When you see the quality of the work this year it has been much better than normal and much less PowerPoints…less movies, more variety in what kids are doing. I think it makes it more interesting for the kids. We are very lucky in that our kids are really compliant – so they will do a second and a third PowerPoint in a year, but

I think what eventually because we are 7 to 10 now (with PBL) - and the same thing will happen with the laser cutter. "oh no not another laser cutter project".

This leads to the other manifestation of the problem the school has related to the next big thing. As Sharon describes it:

Where do you know where the next big thing is. Where do the schools like us go to find out what the next new thing is - that's the challenge. We are the shoulders for other schools sure and we help them out, but what about our kids.

The problem is how do you plan something that you don't know actually is going to happen. With technology now you don't know what's going to happen in a year's time let alone five years time so how do you have a ten year plan for something when you don't know what's going to happen.

You've got to look at what you doing for access to kids but in terms of what the kids are doing with that access you can't plan that long-term. You have to plan what are you going to do for the device for the next five or six years but in terms of what's actually happening in E learning it's hard to predict.

The authenticity comes around from the design of the project itself – what is the actual problem that the kids are trying to solve. You can still have some really inauthentic projects with some really good technology in there and some really different and engaging stuff but still be more authentic.

The problem of where the school goes to in order to see the latest trends was a recurring theme over the course of the study. One discussion with Sharon focused on the school being invited to China to observe some of the latest trends that were occurring there. Sharon said that the trip was a waste of time as the most innovative thing that they were 'introduced' to was the use of Moodle to help structure lessons. As Sharon explained at the time to me, her school had incorporated and in some cases moved beyond Moodle about 3 years prior to the visit. As part of the New Tech High group of schools, they were expected to use a different LMS, namely Echo.

A final issue that Sharon cited, and one that many ICT integrators face is in knowing just how much to help staff and when to step back from helping them, knowing when to see a lost cause and knowing how to resolve issues related to the staff they serve. Sharon started describing this problem when asked if there were any theoretical underpinnings or philosophies that she subscribed to in order to undertake her role.

I wouldn't say that I can name this thing but I talk to the IT staff and the library staff all the time about making sure that we are enabling people to do their jobs. And not do it for them. So the idea is that the IT and library staff should be teaching people how to do stuff so I talk to the team about how 5 or 6 years ago we had to go and plug data projectors in for people. And you don't turn on TVs - you don't have to do that anymore. And our job basically is putting ourselves out of a job for a living. You invest time with staff who are going to do stuff. You don't invest your time with staff who is still asking how to save after three years. I still have 1 or 2 people like that.

Sharon went on to describe a couple of situations where there was a balancing act of who to help, and how often.

…what Jim was talking about before was a History / English combination. We went in and did one workshop in each class. I wouldn't expect Melba or Charmaine (the English Teachers) to be able to teach illustrator. And there's no point in that. It's an easy enough thing, that we don't need the teachers' support in class.

But then I went to Steve's Year 7 class to teach this stuff – illustrator. And then he asked me to come into a second class and then a third. And I thought you know what I don't think I should have to go in to a young TAS teacher's class to show him how to use illustrator three times. I shouldn't have to teach three different classes because then you're just pushing away expertise and he'll say I'm not the expert in this class anymore Miss Sharon is and the kids will see it that way.

Then he wanted me to come in and teach his Year 11 and I said really, let's look at different ways that we can do this.

This doesn't happen very often.

However, Sharon was able to provide plenty of other examples of when this sort of thing does happen. In particular, the school has 2 teachers in a class at most times, so while one is teaching there is the temptation for the other teacher to do marking or other work.

My predecessor used to come in and take out the classes for the teachers and the teachers would sit down the back and do other work and that was

a huge problem because she was not a real teacher - she was support staff. But also you are pushing responsibility of teaching a class over to somebody else. I would rather sit with somebody and teach them.

You pick up stuff over time. I think it's part of your professional responsibility with the other teacher. You shouldn't be just teaching 60 kids while the other teacher's sitting on the laptop going well it's a computing lesson now I'm not going to do anything. So that is the ideal world and in actuality mostly that happens. They interact really well and I think that most teachers pick up strengths from other teachers.

I used to have a team teacher [Religion] who would sit and when the kids were doing a tutorial he would do that tutorial with the kids so that he knew then what was coming so even though he didn't know the content he would wander around and the kids would say I have a problem and he would go well what can you do to solve that what are the steps that you have taken or what has miss told you about that. So even though he didn't know the content leading the kids with questions that modelled good problem-solving.

Obviously every so often you get a teacher who just refuses to do anything. I had Lauren for two years who is no longer at the school and then Kathy had her for a year as well and basically she would come in and she would sit on her computer and do work and go to the kids here's your booklet for RE [Religious Education] that's it. So I ended up teaching RE content as well as computing content. And she sat there on her computer. So we went through different stuff like having really tight lesson plans. 'While you do this I'll do that'.

And in that case when you have that type of arrangement it becomes a very split classroom it was pretty much well you're going to be teaching religion content and I'm going to run a tutorial here on ICT. Rather than becoming that melded model. But it's quite rare.

Part of the school's philosophy is challenging those teachers that are doing that so they either feel uncomfortable and don't stay very long anyway or they get in the program and there are a lot of PD [Professional Development] opportunities.

This is normally the case but Sharon could cite examples of a few teachers who she regarded as 'lost causes'. It was better use of her time to simply teach all the students to use the software over a couple of weeks, rather than spending time with the teacher who had consistently shown no interest in learning even the most rudimentary of IT skills.

There are exceptions to the rules for example I would never expect Dan to learn anything like that. It's better use of my time to say I'll go into all 8 of your classes over the next two weeks and be there to support the kids.

But then again there is more of a team teaching culture here. So I did a drawing workshop with Elly's class the other day and I said you just teach your class normally and I'll pull out kids. So there's an expectation there that you're teaching your class and I'm just there to support. It depends on who you are actually working with. You've got to make that judgment call.

This also leads to an interesting insight that Sharon made in relation to teachers and what they are expected to know about using ICT in their classrooms. The below is in response to a question related to why a teacher of graphic design and the Head of TAS were doing at a workshop related to the use of the laser cutter in combination with Illustrator.

So Kathy was in there to learn. And I suppose if you're head of department you need to be supported as well and she's the most positive. She hasn't used the laser cutter before. And Dennis, the other Multi [Multimedia] teacher - I assume he can use Illustrator but you just don't know. You can't assume that they know everything about computers.

There's stuff I don't even know that is to do with my job for example the other day someone rang and said the switch is down in the building. And I said that's a problem right?

This final anecdote supports Kathy's implicit claim that all teachers need support in carrying out their tasks regardless of what level of teacher they are or how experienced. Using her own experience as an example Kathy intimated that even some really basic network issues can escape her attention as you cannot know all there is to know about a role within a school – in particular one as diverse as eLI. A final thought related to helping staff to integrate ICT and when to help and who to pay attention to was given by Sharon in response to the question of politics and how much of a role it had in her decision making and effectiveness.

I just don't pay attention to it. It's probably harder to draw stuff out in some situations. So you do modify the way you do stuff. You need to be

aware of your staff and whether they get on or not but that comes with the job.

So this concludes the introduction to Sharon. I have described her in terms of the past, the here and now as well as the future direction that has been mapped out for her over the course of the study. I have used her narrative to describe the place she finds herself operating in, the personal and practical knowledge that she puts in to place in her role and the social dimensions of her position. There is a lot that Sharon has said and insights that she has put forward that have not made it to these pages. Some will be described in the analysis chapter of this thesis. In particular, her statements relating to what she is trying to do with the staff, including supporting their changing pedagogic practices will be further examined in the analysis chapter. A particular focus will be to determine if her storied identity affects how she perceives ICT for teaching and learning activities. If the case is proven, then that will highlight the need for Teacher Identity to be included within the TPACK framework.

I will now go on to describe the other three participants in a similar fashion. I leave you with what struck me as perhaps the most insightful observation that I thought Sharon made. It serves as a good summary of the whole focus of her as an ICT integrator and her school as a leading innovator of pedagogy.

I think that we are doing different things not because we try to do different things and not intentionally just because of project-based learning. Project-based learning has changed the way that we use technology it's not technology that's changed the way that we teach.

7.2 Clarke

Clarke is another of the participants in the study. He originally worked in a state school; however, for quite a few years has worked in some of the most prestigious of the private schools in Sydney. He is currently working at a girls' school which boasts some 2500 students ranging in level from K – 12 on the one large site. Clarke has been in his role as an IT integrator for a long time.

… 2 years here. In this role for 16 years. I have been involved in the role since the idea of ICT integration was floated as an ideal. Initially it was enough to live in a computer room and support the staff as they brought a class or two in. You got to focus on the few keen staff who wanted to try things out. There was time to act as a specialist teacher for those students doing major works in the digital realm. 15 years on it is a mandatory tool in the preparation and delivery of lessons. All students have a laptop or iPad and all admin systems and staff rely on ICT. The role has expanded to a point where you are the jack of all trades and expert in none. Time gets spread thinly over a large staff to a point where you have little time to specialize in the things that inspire and could transform facets of the school (my Raspberry Pi is neglected).

This observation relates mainly to the commonplace of time and what has changed in general over the years. Whilst it could also be regarded as perhaps specific to Clarke's school and experience, it is fairly general in nature and would possibly relate to many readers' own experiences. Clarke was alluding to his inability to find time to 'play around' with his Raspberry Pi which is a programmable low cost, credit card sized computer. It is a great device for

hobbyists and, because it allows the user to program it, is ideal for students in school to use. Clarke saw being able to experiment with such technology to be a perk of the job, as he went on to explain.

This job is great because you get to enjoy your interests across the whole spectrum. I don't have any classes - well just one but I'm a science teacher and sometimes I itch to get back in there. I had a science class when I arrived here but I really struggled to get the balance because there was only me and the job was the whole school K – 12. I haven't taught science for 10 years and they'd moved to the new Australian curriculum. They weren't using a textbook here, they were all creating these really interesting programs. Because I wasn't in the department being part of the conversation I really struggled.

When asked about the philosophy that Clarke brings to the position, his response was quite interesting:

None that I am aware of. Each school will have a philosophy; each teacher will have a philosophy. People higher in the structure will make decisions on the broad directions and technology choice (Personalised Learning for example), and I then flexibly try to choose / guide projects in a manner that satisfies both.

I've embarrassed myself with the principal in my interview. You know - educational philosophy. Well I don't really have one. I just come to school and start working. We've got all these experts here so let's see if we can get together and have a common understanding and go from there.

There are several things that define Clarke in his role and in the philosophy that I could identify that he brings to the position he is in. The first relates to the commonplace of place. The school he is at is going through quite a change that is slowly creeping into the secondary space within the school. In the Junior school there are a number of open plan learning areas, and this coincides with a project based approach to some of the teaching and learning that takes place in the school. The decision by the administration has been to continue that open learning area/project based approach into Year 7 this year (2016) and more than likely Year 8 next year.

At last week's meeting it was launched to the senior school staff that starting next year [2016] *with Year 7 who are going to try starting some units of work using some of these open learning spaces to run projects. It will be a third of the cohort going in and working on a project in that space at any one time. Because we have the Year 6's and they've come through 2 years of open learning, we've come to realize that we need to give them the opportunity again. I suspect it will* [carry in to Year 8] *but it will depend on how it is received. It will depend on how well the secondary teachers cope.*

However, because of the way that technology has been handled at the school there is a large amount of work that needs to be done with the students and staff in order to see this initiative through. According to Clarke in many respects the school has failed to thoughtfully respond in relation to technology.

In some ways it might be symptomatic that we really have dropped the ball with technology here at the school. They don't get much integration through to Year 6 with deep stuff. There is no D & T [Design and Technology] elective at all. Through to Year 12 there is no Computer Studies at all… And the unit you saw – Sticky Design, they try to tick off all the digital outcomes in one project. Which is very counter to what spirit of the course is. So maybe it's symptomatic that the girls don't get much opportunity to get their teeth into Digital Technology.

Sticky Design refers to a unit that during one visit to the school, I was able to observe Clarke introduce with a Year 7 Design and Technology class. The unit has a heavy emphasis on the use of PowerPoint to help present a folio of work. It uses quite innovative (or lesser known) features of PowerPoint to allow the students to do some impressive things, particularly with images.

This problem with how technology is viewed and incorporated into the school begins in the junior school. Clarke further explained this when I visited the junior school with him and the other Integrator, Lois.

More so in prep … up until this year. Last year they didn't have devices. They didn't really use the laptops down here. Years 3 and 4 didn't have iPads. They would've had laptops in trolleys that were really crappy things. The teachers didn't prioritize it. We've moved right away from the basics of teaching word processing and all those nuts and bolts but we have gone too far.

I liken it to the 70s and in English they focused on creativity and not the nuts and bolts of the language like the grammar and so I missed out on that. It was creative but I missed out on the tools to understand it more. So I hated teaching the International Computer Driver License. But I think we have gone too far. We don't actually go anywhere near that, so we just expect them to learn it by osmosis. The students are comfortable with the technology but if you scratch the surface, they don't know very much underneath.

I liken it to in the old days when I was a kid. It was expected that people would learn how a car works so you can fix it. Now days you don't really need to learn the hardware or any of that. You just use it to go wherever you've got to go and you pay someone who is a specialist if it breaks. It's not possible for plebs like us to fix a family car.

This lack of a deep understanding of what technology can offer in the realm of learning and teaching is reflected by the staff.

ICT skills are not seen by teachers as core skills for students. Especially in K-6.

This perceived attitude is exacerbated by the lack of consultation that occurs in the school related to ICT.

They removed the computer room because they wanted to pursue the philosophy of integration in the classroom not something separate. But of course people have stopped thinking that we need to set aside or integrate this stuff. There has been a bit of discontent that decisions have been

made without much consultation. The teachers down here (Junior School) have lost their SMART Boards. They've been replaced with monitors and an Apple TV. The projection down here was terrible. The intentions are good but the lead time terrible - people get rushed. They miss doing things properly and people get left out of the loop.

This anecdote highlights the effect that the commonplaces of place and personal / social can have on each other. According to Clarke some decisions are made at the school with little regard or consultation with staff which then impacts on how they can effectively teach in the classroom. In a later interview with Clarke this lack of consultation about the SMART Boards was updated. He relayed this story about what happened when the other Integrator went down to do some work with one of the grades who had lost their SMART Boards in preference (not the teachers') to Apple TV's and large TV monitors.

Sophie went down to run a session for some kids. They were doing programming in Year 5 and she asked 'How do I connect my laptop to the tv?' to the teachers - they'd been using those for the whole year and they said 'We don't know - we don't use them.'

And I don't see that as their problem. So it has been just poorly set up. They were not shown particularly well, and it doesn't work once … and they walk away adamant. So we are going back to some SMART Boards — SMART have changed their whole model so we will probably end up with 1 in the Open Learning Spaces. So there will be SMART Boards and then televisions. I think all of the Year 3 and Year 4 will have SMART

Boards back — the newer ones. I haven't seen any evidence of anyone saying we really love the televisions. You know they are smaller; the experience hasn't been good - it hasn't been bad.

There has been a lot of change in technology both device-wise and with some of the major systems being used within the school which Clarke has to deal with on an all too regular basis. The technology that the students are now using, or expected to be carrying and using, in all classes has changed considerably over the past several years.

There's been a major shift — so in 2 years we have gone to 1 to 1 iPads (in the junior school) and next year 5 to 12 Bring Your Own Device. So that's 2500 students almost. A lot of these teachers haven't taught open learning before. The PD session we had was on BYOT's. All the Year 5 and 6 will be BYOT's next year. K to 4 is iPads. So next year it will be - so you've got kids now on iPads who will be going to Bring Your Own Device… It needs to be a certain age. A fully fledged laptop. No iPads. No Chromebooks. I think just to give a bit of consistency to the teachers who struggle enough. It doesn't matter if it is a MAC or PC — they could buy it through the school, through JB Hi Fi, this Mac, that Mac, a Toshiba, a Surface Pro. So a fully-fledged operating system as well. So these poor people are going to struggle.

This has meant more pressure on the students and the staff with the inherent expectation to be able to incorporate these technologies into their pedagogies or learning habits:

You have change enforced. All Year 5 and 6 are having BYOT. If I'd had my choice I'd say 'No kids are not ready for that. They've had 4 years with an iPad and all of a sudden they have full responsibility with a device. So that's where we have no choice with change management. Things are often being dumped on people.

But if I just trying to formulate - how do we get people to cope with that that's one side of it and managing expectations - you know they may be imagining that the bar is way up here when it is actually way down here. So making sure they are not over awed by the expectations — like with BYOT for example, you know you don't have to be the expert.

A major change that caused many problems for Clarke in his role was the school decision to change their student management system from iWise to Edumate.

With Edumate [school management software], it's been our rollout procedure, it's a new version which is not very well supported - a new company took over. We were using iWise [school management software] and Maze [school management software] before that. It was driven by the ideology of personalized learning. Edumate did a lot of parent portal stuff. So you can publish results and do continuous reporting. If I had the opportunity again to argue the point I'd probably say let's take all the money that we're going to invest and pay iWise to give us what we want. It's just been a real - I've got to mind my language.

So just that confidence that people lost in us. And Ned changed roles in the middle of it. We didn't understand as a team, you know the boss

should have said to marketing 'Your job is to make the enrolment stuff work.' And to the Director of Studies 'Your job is to make the timetable work.' But IT was trying to get it all to work. IT didn't know everyone's processes. There is so much flexibility in the software that we had to get all that right before it was usable. And of course the brand-new interface there were problems with it. We are limping along. We still don't have single sign-on for it. People have to sign in every time they have to mark the roll. And people mark rolls every lesson. It's been a real struggle. And if those sort of systems don't make life easier for teachers, then they are not going to trust you and go to the next step with some software that is pushing the educational boundaries.

When asked later about whether the Edumate problems had diminished in the school environment Clarke responded with:

It's still painful. A friend of mine, he works at [another private school] and they have used Edumate for a long time, but they resisted going over to the latest version which is the one we got caught out with. Now they are being forced to go to Edumate 5 and I said what I learnt is don't let it be the IT department's job. Talk to enrolments and say it's your job to make the enrolment section of Edumate work. Make sure that we understand it.

If you try new things and if things don't work like Edumate, which is a nightmare, then staff lose confidence. And again you can see that my job is still very much about systems and change because that is happening.

This discussion highlights the philosophy that Clarke holds, in that he is responsible for helping staff to cope with the decisions that the school makes. He is focused on the systems that are in place and the necessity to make staff comfortable with those systems.

One thing that I've learned is that you look at the job description for this sort of job and that's not what the job is. It sounds like you're going to be at the fore front of educational theory. For me it's mostly just holding people's hands especially with new stuff.

There are a number of initiatives occurring at the school that are instrumental in determining what Clarke does during the day, how he reacts to events that take place and what helps him prioritise. These initiatives have become part of his narrative as he takes them on board and has to deal with the effect they are having on staff. Part of the school's forward planning is their 2020 vision. Whilst the document is beyond the scope of this thesis, its effect on the three commonplaces of place, temporality and personal/social cannot be ignored in the context of Clarke's role. In an initial interview that Clarke elected to complete in writing he explained part of the 2020 vision.

The College has committed to personalizing education by 2020. This will only be manageable via ICT tools. The following virtual environments are being explored –

- *Course Level Virtual Spaces*
- *Parent Access*
- *Digital Portfolios*

- Student Management system that supports online tracking, continuous reporting and reflection tools

Of course all of these initiatives require Clarke to be able to, in some cases, set up and, in all cases, guide the staff (and perhaps even the parents) on how to work successfully within these environments. The introduction of the Edumate system was driven by this philosophy:

It was driven by the ideology of personalized learning.

This personalised learning model has been achievable only with the advent of the technology, which allows teachers to differentiate and students to work independently at a high level. This could be perceived as a great burden on staff who will now have to look after 25 individual learning programs in their classroom. This is not the correct way to think about it as Clarke explains:

That's the thing that I often say to the staff about personalized learning. We tend to make the mistake of thinking that the teacher has to take responsibility for 25 personal journeys and I keep thinking 'No it is the kids' responsibility'.

Clarke has to do a great deal of thinking and planning about how personalised learning can be managed within the school. His philosophy is based around his belief that:

I think that's the only way that we are going to do well with personalized learning is if they have their own personal space to share. So here's the

process, not only the end product – you know the parents are involved, the kids are involved, they are involved with their friends.

Another part of it is the continuous assessments, so rather than having one off reports every semester we are trying to get away from that. So the parents are constantly communicated rather than a one off waste of time.

So here's a great example. Year 8 did their first exam at the end of this year, so they went through Year 7 and 8 without doing any formal exams.

And when asked about how the parent community responded to this new model for assessment he described it in the following way:

They seemed fine. And the idea is not to label them and try to develop a growth mindset and try to give them time before they settle in to getting measured. They did have topic tests in their class but never the formal end of term exams. They weren't reported on each semester but I think that from now on we are going to just monitor for the year – just gradually get away – we haven't released the continuous reporting side of Edumate yet – we are still getting parents set up with accounts. As I say, Systems, Systems, Systems.

There is a trade-off to this initiative and that is that it does not focus on the marks so much. In the environment that Clarke is in this is a cause of tension due to what he and the other Integrator see as a disparity between what the school is trying

to achieve and the culturally based belief in the importance of marks particularly with the large number of Chinese within the school community.

You know personalized learning is not focussing on the marks, it's focussing on the journey. But with the Chinese culture typically it's all about the marks so that's a bit of a tension.

Another result of this change to the way that fundamentals such as assessment and learning are being overhauled within the school is that there is an increase in the turnover of staff.

This 2020 push has led to quite a few staff leaving so you expect HSC results to go down. People leaving due to too much change.

When asked if the reasons for this increase in staff departures was due to higher demands for technological incorporation into pedagogy, Clarke responded with:

Tech would be the least of them actually. The 2020 push. Next year a lot of departments will merge. I assume it is mainly to break the power of departments – certainly there is a lot of strain… A lot of people say they are caught up in the stress of the school. The classroom is where they go to hide and all the rest of it is a distraction which in some ways is true. On our learning walk, especially in the senior school, we noticed that a lot of teachers have the door closed and their blinds down… hiding away.

Clarke sees part of his role as being responsible for reducing this stress among the staff. One of the great initiatives that he and a few others are putting in place

to help staff to cope with the changes being brought in is that of the 2020 Curriculum Planning model that a small group has formulated.

Recently I have begun working with a team of staff who are also supporting teaching and Learning. This includes the Director of Teaching and Learning, Head of Library, Head of Learning Support and the Head of Wellbeing. The aim of the team is to develop a unified approach to curriculum development across the school. The school has strong directions in place and involvement in this team helps to focus our efforts on shared goals. So each of us trying to think when we are working with the teacher on a project to support it what are the driving things that we are thinking about. Sustainable innovation staff well-being, so it's just great having everyone throwing their ideas in. The school's values - we're just trying to unpack. And I love the fact that here we are not just taking something off the shelf like a book from Harvard and saying here's what we're doing. We are trying to come up with our own framework. We have just been talking about this learning framework. How it's been great but it's convoluted trying to take all the disparate thinking and line it up.

Clarke described how the Curriculum Planning team followed an approach designed to answer a number of key questions, which in the view of the team would make the learning that takes place more authentic, more suited to the level and supportive of student needs.

So these are the questions that we're wanting to ask of any teacher that we're working with:

Are the girls working at an individual point of challenge?

Do we know the point of challenge for the girls?
Can the project provide growth for all learners?
We try to get 8 questions that need to be asked with each project: ways of inquiring, ways of thinking, ways of supporting - how will this project be set up to support different types of learners, ways of teaching, ways of feeling we have sort of partnered with Yale University. It has got a thing called RULER - I can't remember what the acronym stands for but it's emotional intelligence.

An interesting statement that Clarke made in relation to the Curriculum planning group centred on the role that IT takes in the meetings.

The good thing is as I'm sitting there IT takes a backseat. We try to frame it in terms of our roles so that it's easier to manage. Here's the IT questions and here's the research questions and here's the teaching and learning questions but as we're working through we've realized that IT supports the other areas. It's not something that stands alone. It's not as neat and tidy as we would've liked in terms of the organization of it. Demonstrating performances of learning that's authentic, risk and resilience, emotional intelligence - that's where the well-being section comes in - both the staff and students. Collaboration between staff. I think staff want that more because it seems to be the only way that you can survive with all of this new stuff happening. Certainly in the junior context with the team teaching that they have with the open classrooms.

The Teaching and Learning Team are currently working on a digital tool that will help us as we support staff who are developing new units of work. It will guide in the following areas –

- ICT Capability
- Information Literacy
- Differentiation
- Wellbeing
- Teaching and Learning Strategies

In a later interview, Clarke was asked how this group was progressing:

It's been quiet of late we haven't met but it is still there. We've been meeting of late for the Year 7 Open Learning Area so there'll be the head of teaching and learning and myself and there'll be the head of library. Not so much the head of welfare but it's still a fairly what's the word – there's still a lot of momentum… well it just makes so much sense when you stop and think about it. Too often it will happen where people will meet without thinking about our role there and will come up with ideas but will miss the point or not be aware of better options. So next year is going to be big it is going to be interesting when all those things come together. We haven't started building that tool that we want to use for project planning – we did have the Director of Teaching and Learning - she ran the iLead Year 7 learning planning day. She used those 8 questions that I sent through - as the basis of driving discussion, so it's good to see that our thinking is starting to work in groups. It's too complex to work in any other way than slowly slowly and again we have to jump in and time is the killer.

The questions that Clarke sent through were part of a PowerPoint presentation that he talked me through during an early interview. There are several questions (listed below) within the following broad categories designed to get teachers planning units of work or collaborative ventures to think deeply about what they are trying to get the girls to achieve. The digital tool, which is being created, is intended to engender an environment where many facets of a student's growth are included in the thinking and design process surrounding the pedagogy, content, and technology planning.

1. What are the ways of Learning – Inquiring, Thinking, Working?
2. How will we design for personalised learning?
3. How will we provide opportunity for students to engage in diverse ways of learning?
4. Ways of Supporting: How will we provide opportunity for all learners to experience challenge and achieve growth?
5. Ways of Feeling …. How can we integrate and promote positive wellbeing? (Can we include staff also?)
6. Ways of Connecting: how will we advance digital citizenship?
7. Ways of Assessment: how will students demonstrate their learning?

The group has described the tool in a diagrammatic fashion, highlighting the 5 Innovative Learning Principles that the group has identified, together with the three 'accelerators' to learning.

As part of the Feeling section of the planning, Clarke discussed a tool that the school is experimenting with to help the students to monitor how they are feeling in particular lessons over time (Figure 7.1).

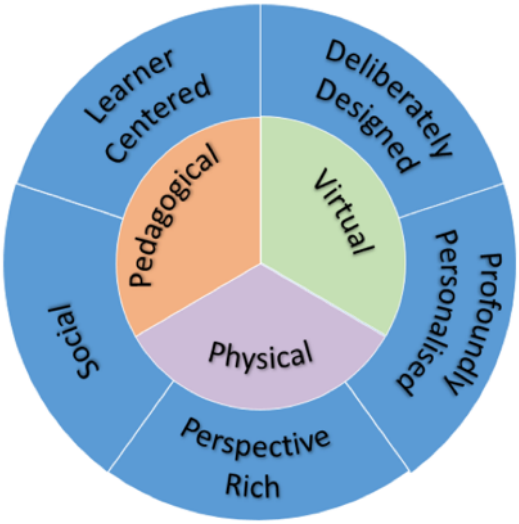

Figure 7.1. Clarke's College Project Planner

The mood meter - we are doing that across the school so how do we want to feel in class. What do we do to change how we feel? What do we do to change how other people feel? We are trying to build that into projects so that well-being is intrinsic to them. So the kids learning this mood meter app. The X axis is pleasantness. The Y axis is energy. We tell them all the emotions are good. It may be great to have something online so the kids could say in this class I feel blah. I'm always feeling this way in that class. What do I do about that?

Clarke went on to describe his thinking on the Curriculum Planning tool and what the team were trying to achieve.

I really value that we're trying to filter through the 'BS' and come up with a holistic approach. You know, so often you'll be using a tool like

this for the staff well-being and you'll hear you know 'oh it's for the girls, for the girls'. But it needs to include the staff. If you have happy staff, you'll have happy students. So really we have been thinking that IT will be involved in all of this. How do you provide prior learning? Pretesting online? You know using a virtual space to give room for differentiation. You know 'you guys do this you guys do that.' How's the project going to fit in with what we want as a digital citizenship continuum K-12. What needs to be in reinforced what new skills and responsibilities.

So the tool that we come up with will be used initially just by us to guide our thinking and support of projects. Eventually there will be a feedback area of this where we will collect samples of what is being done. And through the library website, staff will be able to look at those and go 'hey that project looks great', and they can emulate that and they can look at the data that's in here. What was done. How it was done. What the feedback was to make improvements.

Initially it's just us. Long term it would be great if we could get it so that it was self-service. Teachers could just go in themselves… 'I want to do a project on blah' and they can just help themselves. I'm not saying that every project has to incorporate everything but it's just the trigger. It's one of the reasons why I was keen to come here because they're sticking to a set language.

My experience of PD is that people hear stuff and they learn not to listen they nod their head. But they know that if they duck the wave that

there's another wave coming with different language. If you have a system like this that keeps reinforcing the understanding and the language it might have a chance to stick. There's a lot of validity about it because it's coming at staff from all the directions. And if we incorporate well-being then the staff are going to feel good about it.

Another innovation that Clarke has been working on related to the commonplaces of temporality and place concerns the way that the school community is dealing with digital citizenship. This initiative describes very well the power and usefulness of ICT in classrooms as Clarke sees it and allows the reader to look further at Clarke's narrative in order to get a sense of what drives him and what sorts of societal, workplace and contemporary issues shape him as an integrator.

Part of the 2020 vision of the school is the push for personalised learning. As Clarke acknowledges:

The College has committed to personalizing education by 2020. This will only be manageable via ICT tools. The following virtual environments are being explored —

- *Course Level Virtual Spaces*
- *Parent Access*
- *Digital Portfolios*
- *Student Management system that supports online tracking, continuous reporting and reflection tools*

The school is considering the introduction of a digital licence in order to guide the students and help them make sensible and informed choices when it comes to their on-line presence, identity and actions. This is necessary due to the increase in the use of 'virtual spaces' within the teacher's pedagogy.

Virtual Class spaces are becoming more widespread. They are easy to use and so don't require much support bar the initial setup (we only create them on request and demand is rising). We've been playing with this model where teaching happens in the context of the physical space in a virtual space.

Combined with the need for parent portal access, digital portfolios, continuous assessment and the ever-increasing use of online tools for research and content, this leads to the necessity for a structured Digital Citizenship program within the school, of which the Digital Passport is one facet.

Like most schools, Clarke's is not immune to some of the effects of social media.

Some of the girls were texting boys at another school whilst they were meant to be doing their maths in class so we've – there's been a few knee jerk reactions to step back from that. So we've blocked My Messenger, blocked Netflix. It would be nice if we could be a little bit less reactive and more proactive with educating them. It's like bullying. You know bullying in the playground – you are not allowed on the playground any more – we don't do that.

To counter such activities, the school believes the Digital Citizenship program will benefit the students and make them think carefully before participating in any online activities.

We are moving to a policy of open technology where students take on responsibility for their online activity. We are currently building a Digital Passport K-12 that is based on the ICT Capability. It aims to educate staff, students and parents on the benefits and responsibilities surrounding access to new tools. Most will be focused on K-6. All will need to be embedded in curriculum.

In a subsequent interview when talking about Digital Citizenship in relation to the curriculum planning tool, Clarke suggested that the Digital Citizenship program should expand into the secondary school as well.

We thought maybe we should expand this to ways of connecting citizenship in the physical and virtual worlds and tie it back to that model. We are exploring slowly the idea of a digital passport. Based on the IST capability but expanded to what we want the girls to be able to do here. You know take them on a journey from control to 'You're in Year 12, you are using Facebook for your physics class. That's fine.'

The thinking is that they have got access to all of this stuff anyway. Why bother try to control it. Really we are protecting the school. We're trying to take them on a journey especially in the younger years, with their parents. The kids are developing their understanding but the parents are not. My thinking is that every bit of technology has a good side and

bad side. So a laser cutter - it gives me great power. The downside is that I don't learn how to cut out things manually.

So we want to set up a series of 'Here's an opportunity for you.' We're going to let you take photos at school on your iPad. The camera's turned off but we are going to turn it on. And what are your responsibilities. Well, you don't take pictures of people without their permission or put them somewhere without telling people where you put them. So the girls can talk about it at home and they can do a unit using those skills. Gradually you open up doors so here is the next step. This is great - it's your responsibility to make sure you don't do the wrong thing. So hopefully that's going to help embed things in the curriculum.

This Digital Passport idea had gathered even more momentum by the time I had the final interview with Clarke.

…We've been pushing this idea that computers give you superpowers — so that's one of the jobs in January is to try and build an online interface - where there is a picture of a camera greyed out and there is a picture of a USB stick greyed out and as they do activities the teacher can tick a box and the resources can light up. Even though we are nowhere near a K-12 map we can start to fill in bits and pieces so we can track the kids. We are going to use a similar thing for Year 5 and 6 because they have to do so much with the laptops.

It also provided insight into what Clarke sees as the futility in some respects of what schools in general are trying to do regarding controlling students' online access.

A friend of mine did a cartoon for me of a lifeguard at a pool on an island and there is a big fence all around the pool and there is no one in the pool - the kids are all in the ocean - and I use this as an illustration that there is no point us trying to control things - they are all doing whatever they want out in the ocean.

The personalized learning vision that the school is trying to achieve has influenced greatly what Clarke has to do in his role. It means that he has to focus on those aspects of learning and an online presence that will bring about this change.

I'm just thinking about the online digital environment that puts all the blog space out to the Edumate side of things with parents connected to the process. I think that's the only way that we are going to do well with personalized learning if they have their own personal space to share. So here's the process not only the end product — you know the parents are involved, the kids are involved, they are involved with their friends.

The continuous assessment strategy has already been described when outlining the initiatives that the College was undertaking. It is also relevant when considering how place and temporality affect what Clarke is doing in his role. Below is a slightly longer version of the quotation describing it with a little more explanation:

Another part of it is the continuous assessments, so rather than having one off reports every semester we are trying to get away from that so

the parents are constantly communicated rather than a one off waste of time.

So here's a great example. Year 8 did their first exam at the end of this year, so they went through Year 7 and 8 without doing any formal exams. The idea is not to label them and try to develop a growth mindset and try to give them time before they settle in to getting measured.

They did have topic tests in their class but never the formal end of term exams. They weren't reported on each semester but I think that from now on we are going to just monitor for the year – just gradually get away – we haven't released the continuous reporting side of Edumate yet – we are still getting parents set up with accounts. As I say, Systems, Systems, Systems.

Moving to the commonplace of the personal/social dimension of Clarke's narrative, there are two standout themes. One has to do with technical support personnel and the other, unsurprisingly, has to do with how Clarke sees his relationships with staff as paramount in affecting his ability to fulfil his duties.

Starting with the Technical Support Staff, Clarke has very strong views not only about the role that technical staff should carry out in the school but also about the type of people that the school should employ as technical staff.

Technical staff typically fail to understand the needs / pressures on a teacher. Teachers will often come to the integration staff for support with problems because they trust that we'll understand and push for a

solution. Whilst this builds a great foundation when working on curriculum development you can lose all of your precious time doing trouble shooting.

Clarke sees troubleshooting as something squarely within the responsibility of the Technical Staff; however, he is frustrated by their somewhat indifferent attitude towards the staff requesting the support. He goes on to describe this frustration in subsequent interviews.

One of the things that you quickly learn is that techs just don't understand teachers. I remember talking to a group of teachers at the breakfast club and at the back I could hear the techs laughing. Later on I went to them and I asked them what they're laughing at and they said 'How come when we give teachers an idea they say no no no but when you give them the same idea, they say yes yes yes?'

Teachers don't trust techs. That's one of the reasons I came to this school. At my old school I was working at I really struggled with the head of IT who was not a teacher. Here, Mark is a teacher and typically heads of IT are not empathetic. If they are not a teacher and don't understand them they will make decisions that are based on technology and not based on teachers or education.

During an interview with Clarke, a student came to ask for some help with a project that she was working on. It gave me a chance to see Clarke working with a student on a project. It also gave Clarke a chance to describe how students are treated by the Technical Staff at times.

The students don't always come for mentoring. Sometimes they just come for us to help them solve problems. I was just saying that I came to work here because I have to work with a head of IT who is a teacher and how technicians often don't understand and they can't prioritize because they don't understand what is driving a teacher. So often we will sit here and will hear things happening out there (points to the tech work area) and if things are working well the techs will come in and ask can you help with this because often the technicians won't know what's happening in the classroom. We try to address that a bit by talking about projects in meetings. So that if a kid comes in they can go 'oh I know about that', rather than just telling the kids to go away. One of the students was setting up a website about plays on WordPress. She came in and now it's blocked.

Clarke was able to give a number of examples of how the Technical Staff's ignorance of what is going on in the school and lack of understanding of the pressures that staff are under has undermined what he is trying to do in his position. I was able in one visit to the school to attend a typical Tech/Integrator/meeting.

These meetings take place each week at the school and are an attempt to alert the tech staff to things that are coming up within the school that they may need to prepare for or even just be aware of in case students come to see them. It is also an opportunity for the Integrators to learn what the tech group are planning. The Head of IT (a teacher) and the Head of Technology Support run the meeting.

In the meeting I attended, there were 11 tech personnel present, as well as the two heads and the two Integrators.

In an email correspondence with Clarke after this meeting he expanded on why he feels it is so important for the Head of IT to be a teacher.

It's all about priority / decisions. The risk (as you'd be well aware), is that what looks good on paper, what looks good for marketing, what techs find "easy" to use – doesn't work for the teacher. It's so easy for an 'us and them' culture to arise where the IT Department think the teachers are stupid and lazy because they can't/ won't learn and teachers walk away because they think the IT team arrogant and stupid because they frustrate the teachers by not being able to provide what they need.

I remember hearing a head of IT in a planning meeting with exec staff saying that "teachers are lazy" because they wouldn't navigate to a particular intranet page to do some admin. The fact that the navigation didn't make sense to the teachers didn't come into his thinking.

A typical outcome of this sort of tension is a push by the Tech team and the exec (often), for staff to do more PD. In my experience, it's a waste and adds further burden. Our baseline thinking should be that "Staff have no time and our job is to make the IT as simple as possible and not set the bar for innovation too high"

The school in question were so happy that they got a Head of IT from industry. He was also a non-native English speaker. Teachers often don't

realise that they specialise in communication and relationship. My thinking is that to support them you have to be very good at communication as well as relationship. If not, a rift naturally develops. Underpinning communication is empathy and it's:

1 - Rare to find IT specialists who are strongly empathic.
2 - Hard to be empathic if you haven't spent time in the others shoes (Teaching)
3 - Struggle with the subtleties of the language.

The language barrier aside, in an ideal world I'd like to see all tech staff in a teaching role during some of the year.

Clarke described how this inability of tech staff to be empathetic can undermine what he is trying to achieve in the school.

They don't know what it is like when you are out the front — you are taking a risk and you are trying something new and NAPLAN [National Assessment Program – Literacy and Numeracy] is looming …and the technology doesn't work and then you just fall back on traditional methods.

So we ran a project with all of Year 6 doing PBL. We decided that we would get the teams working together using OneNote. One teacher per notebook so we had 5 teachers and 30 kids per teacher. Kids in groups of 3 or 4. The end point was then to create a green screen video in Premier Pro and they were doing Behind the News. And doing graphics in PowerPoint.

So I bumped into the teachers bringing the Year 6 kids up to the Senior School library. They couldn't get WiFi access so one of the techs went down and found an access point was out and they sent a picture of a kid holding up a laptop (to the access point) and these teachers had been teaching in an open learning environment. So the classes were in an open learning area.

So they did that work at the start of this year. Still no WiFi. So my Head Tech went down there — found there was only 2 access points down there all year … for 150 kids and I was furious cause the teachers have been complaining. The techies said 'Well nobody told us.' So I looked through the help desk and there were tickets in there that nobody had noticed. So I went back to the techies and I said 'Who is going to apologize?' "We are just going to fix it."

And that was a key point to me. Teachers — they understand they feel the pain. Tech's just don't feel it.

Clarke gave another anecdote in another interview, talking about an experience that the other Integrator had with how the technicians were supporting the technology. This followed on from the decision as discussed earlier to replace the SMART Boards with Apple TV's and Large Screen monitors to solve the projection issues.

Sophie went down to run a session for some kids they were doing programming in Year 5 and she asked 'How do I connect my laptop to the TV?' to the teachers - they'd been using those for the whole year and they said 'We don't know - we don't use them.' And I don't see that as

their problem. So it has been poorly just set up - they were not shown particularly well, and it doesn't work once and they walk away adamant not to use it again.

Throughout Clarke's discussion of the tech staff, it was easy to see the frustration that he has when they do not do their job properly or do not fully appreciate the effort that teachers put in to their lessons only to have them sabotaged by poor technology. A final experience that Clarke related describes very well what qualities he sees as most important in tech staff in an education setting.

Teachers just want a system that works. Even simple things like — there'll be a computer without a screen for a teacher to be able to see how to log in — you know you think you have a good system but the techies don't think like teachers. And you know it's just annoying.

We had a teacher who wanted a document camera — he (the technician sent to help her) was trying to convince her to use an iPhone and use it with the Apple TV. I said 'No. No. She needs a wireless document camera'. So I put a job in to the techs to get it running - to connect it back to the computer. And I found out 6 months later that the techs could not get it to work and so she never got to use it.

So there is just having that time to chase things up and the communication. So it is not ideal - the techs should report back. They don't see the need. Also there is a divide between the techs and teachers. They will only help some teachers that they like. I think we should only employ kids who had a great time at school and who love teachers.

By far the most important aspect of Clarke's job as far as he is concerned is his ability to work with staff. He sees his relationship with them as the most important aspect of what he does. He spoke at length over the course of this study about relationships that he has been building. Right from the outset, Clarke expressed the importance of these relationships. In an early written correspondence with Clarke he gave this response to the question What do you consider to be the most important aspect of your role?

The focus is the support of teachers as they seek to embed educationally effective ICT use in their classrooms. The following things underpin this:

a) *Helping them to use ICT systems in the development, collation and delivery of resources*
b) *The use of communication and database tools to enhance their efficiency in the administration of their roles*
c) *Change management methods that keep staff in "Flow" as opposed to overwhelming staff.*
d) *Trusting relationships*

This theme of building trusting relationships and using change management methodologies that are designed to not overwhelm teachers with too much change at a time, became a recurring theme throughout the study.

To give some background, Clarke works in a large school with many staff and getting time to help them regularly is difficult. I asked him about typical interactions with them.

We have around 300 staff and regular is difficult to define. Certainly, there are very few opportunities for regular training sessions (time is very limited). As they pursue new ideas, some staff will seek me out more often than others. Most interaction is responding to problems and 50 emails a day is not uncommon.

A typical interaction, 9 times out of 10, is one based around problem solving. Always 1:1 work is best as skill / comfort levels vary widely. Interactions have to be driven by compassion for the concerns of the teacher and a desire to support them as they try new things. One of the most gratifying compliments are when a teacher says "you never made me feel dumb".

Group interactions are rare. Typical would be working as part of a team in the planning of a project. We do run training sessions at lunch or after school when new systems are rolled out. This would usually involve 3 to 4 staff members and the training is flexible to their needs.

One of the biggest issues that Clarke sees related to his role is the need to be seen as a support rather than as a replacement for the classroom teacher.

We have to be very careful not to take classes for teachers. Whilst they want this to happen we have to insist on team teaching initial roll out of a new unit so that they can be self-sufficient next time around. Sometimes we find it really difficult to say to a teacher 'No we are not going to take your class.'

In a later interview Clarke gave this description of an interaction with the librarian.

I had a bit of a stir with the head of library the other day. The kids are doing digital textbooks through learning 'theatre'. She said 'You guys can handle all the passwords and things can't you?' And I said 'Just because all the school uses IT - every facet of the school uses IT, doesn't mean we have to do it.'

But it's a bit of a mindset - IT will take over and do it.
It's hard to learn how to push back and just say 'No. This is your job. We'll help you with the system but you guys have to take responsibility.'

He also related an experience that staff at another school had with their Integrator when they went back to ask how to do something a second time.

I remember hearing about someone in our role who shall remain nameless…I know people working in his school and if they go to him asking how to do video editing he'll say no I told you last time I've already taught you once. You need to have real empathy for this role. You need to have an empathy for what teachers are struggling with. Sometimes I think some teachers are lazy but on the whole I think they are just surviving and if they get some time to do something else then they will.

He went on to describe this culture of doing other things when the opportunity presents.

For example, in the English department some of the girls were publishing into Weebly. So we ran some training and the teachers would sit there marking. That culture needs to shift. We have some teachers taking their marking to staff meetings and we only meet as a staff once a term.

Mostly however, Clarke has very positive experiences with the staff he is trying to help. When reflecting on the job description he expressed that the reality is far from the theory. The anecdote that he describes below begins with a few lines that I have already reported, however, I repeat them here to provide a context for the story he is about to tell.

One thing that I've learned is that you look at the job description for this sort of job and that's not what the job is. It sounds like you're going to be at the fore front of educational theory. For me it's mostly just holding people's hands especially with new stuff. (Shows me a thank you email). You know that for me (pointing to the email) – you go home and you sleep well. So the head of English. She's got an assessment task with the girls you know it's an oral task. So I made a form for booking the Year 11 assessment for orals. Last week we sent it to test – it's a Google form. It's got a countdown on it using a plug-in called Form Ranger. This has been such a difficult thing to find a solution for. We needed to put the session options up and once they are full then they're locked. Because otherwise it would do their preferences in the survey and the teacher would have to go through. You know – 25 kids want this one. There are only 20 spots so then who do we choose who goes where. So they have to logon with their Google account and choose their preference.

So this plug-in - so you put all the stuff in and it'll do a count and when it gets to the magic number it'll hide the option. And it's great because the teacher just gets a spreadsheet and even though it's not high-end educational value for the teacher that's trying to manage it, it's really useful.

So the job is at least 50% trying to make the administration of their job easier and more reliable and then the rest might be the good educational stuff.

These positive experiences also occur when systems fail if the relationship between Clarke and the staff member is built on respect and trust.

To give an example of how things can be different - At yet another school I remember running a Year 8 English video unit. It was a huge undertaking and staff were going way out of their comfort zone. The Integration staff worked very hard to ensure success and teachers were excited. I made a mistake with the booking of a computer lab for one lesson and left a teacher stranded. The key point is that they wouldn't let me apologise — because relationship was solid, because they trusted, they could cope with the inevitable glitch. I find this true so often with ICT. People cope with failure if your work is based on relationship. If your work is based on tech and "innovation" they don't.

As mentioned, one of the key parts of Clarke's role is to take away the pressure that staff feel – pressure related to change and uncertainty about the technology that they are expected to incorporate into their pedagogy. A technique that Clarke

uses is to encourage staff by reassuring them that 'the bar' is not as high as they might imagine.

We just raise with them what the challenges will be, trying to help them be comfortable, you know they don't have to be the expert. I said to them, 'You know I presented to Year 10 how to survive Year 11 and the HSC with your device.' You see the hardest thing is I don't have the answers anymore. I can give them the right directions but I can't anymore say do this do that. Sometimes you will get people coming in saying 'Look, I've got an idea what do you think? You know, what direction?'
But often those people are OK looking after themselves. We are like policemen – we are noticing the ones that are struggling.

When asked about the teachers that are struggling and how they get noticed, Clarke described it like this.

On the whole they come to us. There's no one – this school doesn't force people to…you know you can be a good teacher without using great technology. I find I'm doing less and less great projects. You know even when I think back you know the great projects that I did, they would be one offs – they wouldn't have longevity – too much effort too much expertise required.

He then described an example of a 'great project' and how he actually feels about such activities:

I remember that at [another school] where I used to be there was a newspaper article on a couple of girls fixing an old Morris Minor. That's

great for headlines but it's a couple of girls and you can't do it every year and what happens to the other 28 girls in the class?
I'm setting up at the moment an online journal for the Year 7's coming in where they can set goals and tick off goals and then they can blog about various aspects of their learning through sharepoint, they can all be involved – it's not a Morris Minor but it's all inclusive.

The idea of lowering the bar to reduce stress for staff, not expecting the 'great projects' all the time but realistic projects instead, is a focus of Clarke's. This is particularly important in his mind when it comes to change management.

In terms of change management, we are talking about the things that are enforced on staff. How do we help staff to get through the process? That's working alongside them, the empathy, the understanding, trying to simplify it, trying to set up systems that will support them. So I've been working with the online virtual environment for Year 5 and 6 to make it a bit more flexible for what they want to do. Sort of greasing the process a bit.

And then there is the other side of it which is the voluntary. How do you encourage teachers to bring new ideas that they might have? I guess that's where a team of people – teaching and learning, librarian, learning support wellbeing, us. Whenever there are projects planned we get to be part of that to try and suggest options that the kids will find challenging and interesting and will tie in nicely with the teaching and learning and that we are confident won't cause – won't be too hard or too stressful.

As Clarke so eloquently explained when I reacted to the part he will play in setting up the online environment for the Year 7 Open Learning initiative

It will be interesting. I'm so tired of being interesting.

Whilst the analysis and discussion of Clarke's narrative will occur in the following chapter it is important to acknowledge that people in positions such as his do have a lot of work to do. There are many connections to make between the various projects that are underway in the school environment. Often this is necessitated by the wishes of the administration, however, it is also a result of the times that we live in. There is great change occurring in society due to the online, *always connected* nature of how many people now operate. This includes the students in our care. Little wonder that Integrators get tired of being interesting – we are always looking for the next big thing, always coming to terms with it and determining if it is something that will be of use for the staff that we will need to support. This further highlights the need for the TPACK framework to include Teacher Identity. It is statements like 'I'm so tired of being interesting' that demonstrate just how dependent visions of what is desirable to be incorporated into classroom practices reflect the teacher identity (in particular the eLI) and what they deem worthy of inclusion.

7.3 Ned

Ned worked at a boy's non-systemic Catholic school that caters for students ranging from Year 5 through to Year 12. Over the course of the study, Ned worked at this school for all but the final interview. That interview, whilst finding

out about his new role at a different school, was primarily concerned with what he had been doing at the initial school and the data presented here all relates to that school. Ned came from a corporate background where he learnt many of the skills that he claims have helped him in carrying out his role at the school.

In my present role I have been in the role for 18 months and prior to that I was in a similar role for an extended period at another school. So all up about 6 and a half years in an eLearning Coordinator style role. I am actually a chartered accountant by profession. But in my work in industry I was heavily trained in the productive applications so I went through extensive office training, extensive communications training, presentations, persuasive presentations and then also being groomed in that environment about how to be professional in the real world.

When I entered the teaching sphere I realised that a lot of what had been given to me from industry was what was really underpinning the current pedagogical flavour at the time which was about real world tasks coupled with technology to bring about a simulated real world experience for students. That was one of the elements in the NSW Quality Teaching Framework at the time and then that has grown in dimensions throughout a range of other spheres. That's because I could hook into that and see how it happens and I could make those experiences for my own students. It led to me becoming a leader in that area for other teachers.

When asked about when he first became interested in technology in the classroom and the passion that drove him, Ned replied

I didn't do computers as such at school. Although very rudimentary at the time, using very early pc's in a school that had one lab, my accounting teacher made us do accounting in Excel at the time. So from early on in my education during later secondary I was exposed to computer use. I think I was hooked then. Because there was a real world application. Which was really interesting because that has followed me. In the subject (that was in Queensland), that was accounting, I was doing the books for fictitious businesses on line on a computer and that hooked me into how could I use this in a real world. My learning was real world learning as a result and so I've followed that passion right through.

The school where Ned works as eLearning Integrator, has a number of issues that Ned identified as having quite an impact on how he can do his job and the success that he achieves. Not surprisingly, many of these issues can be viewed through the lens of the commonplaces of temporality and place and more often than not, a combination of the two.

One of the main impediments to his ability to do his job is time. Ned is the only person in the role in his school and he has a set time to meet with staff once per fortnight, but a lot of his interactions occur on an informal basis.

There are currently 90 on staff that I look after in this current role and that includes junior staff (Year 5 and 6 teachers) which is an added challenge. But day to day I would have an enormous amount of interaction. Lots of it is ad hoc - call to coach, when some staff are having difficulties. Normally those difficulties actually are more administrative in nature. The ad hoc queries would be a teacher who can't remember how to do some formatting in word or a teacher who can't remember a formula in Excel…or 'How do you go about doing this?' for quite a basic task.

The ad hoc queries aren't normally to do with an education experience that is happening in a classroom. They are normally about productivity issues that a teacher is having in the moment to get something done – just in time learning basically. It is good that I am approachable and then, my view is that translates to a trust value and as I said before that relationships are at the core of the job and then that is where you get a lot of leverage when that teacher is planning a pedagogical experience using technology and they are seeking a deeper level of assistance and coaching in how to implement something in their classroom.

So an example would have been Ok I've done a certain amount of a task, so I've developed an activity and this is for a new product that we've got, Literatu, and I'm at the point where I need to assign it to my students and they just don't know how to do that – can you tell me how to do that. So that would be

the first level interaction and it was very ad hoc which involved me having to manage the expectation. So my first question back was 'When are you delivering?' because I needed to assess is this something that I need to do now or is this something that I have a little bit of time to come back to the person with a more formal coaching opportunity. Because very easily you can be hijacked into someone's agenda and I've often found that when you are hijacked it doesn't result in a positive outcome because it is too rushed, too flustered – they may not need it straight away. I've learnt not to jump in.

You have to take a considered strategic approach to assisting someone and I like to use the term coaching because I'm trying to move away from 'Do this, do this, do this, do that', to more about 'This is how you might think about approaching it. This is where you could get the additional help. If you run into trouble your first port of call should be the help menu. There's lots of materials that are available.' So coaching the strategy rather than the specifics because the program will have a shelf life, the learning activity will have a shelf life but if you can engender strategic thinking in the teacher into how to manage technology and all the newness of it then you are going to have a much better outcome in the long run.

Part of the cause of Ned's large amount of ad hoc interaction with staff is his high visibility due to him not having an office. This commonplace of place is something outside of his control and something that the readers (if an eLI) may be able to relate to. He had mixed feelings on this situation.

I do not have an office in my current role and that has some advantages and disadvantages. It means that I am on tap 24/7 when I'm in that space. It means that I also have to manage that because sometimes I have to go away and hide…I have my own things to do I still have a teaching load, my own core business. But on the other side it does mean that I'm highly visible and the agenda is not something that is hidden away in an office.

At my previous school I had an office and the office had its plus side that I could close the door and it was some type of a barrier but it also meant that teachers were much more prone to whinging in that private space, so I dealt with a lot more whinge and a lot more counselling of people's incompetencies than I do in an open plan environment.

I think that is because in an open plan environment people do vent their frustrations but they are much more reluctant to expose their deeper anxieties in case someone else is there which is a big positive for me because one of the things that does burn you out is being drawn into their emotional issues and it happens regularly. I have had staff members crying because of technology.

Ned works regularly with staff at the group level. I was present at both small group (7 or 8 staff) and whole staff interactions that Ned ran.

Well at the group level, there's really two groups that I deal with regularly. There's the whole staff and then there's in say Professional Development sessions that I run. So with the whole group one of the things that I'm very conscious of is that my key message about technology can turn off a lot of minds and one of the things that I try to do when I'm speaking with staff is to make sure that I have a really interesting hook whether that be a simple technique like clapping hands in a particular patterned way to gain attention, to having some novelty things to gain people's attention so I've done things like open with me confessing that I'm a day time television addict, to having brought in a banana and a ginger and asked people to consider their understanding of knowledge as being more like a banana or more like a ginger root.

It got people listening. I got people in by bringing in a breakfast buffet and talking about how technology impacts a range of different people on staff. So basically do we have people that are eating Coco Pops that get high on the technology run off with all the new fads but don't really get very far because they run out of energy and they're off onto the next thing or are they more like All-Bran which gives you the shits or is it more like Cheerios - that nice balance where you're taking some consideration to do something well that serves a purpose and is also palatable. But the key things that's reported back to me is that my message is heard because of that.

It's not the same delivery method that other leaders within the school use. So it's very distinct, it's very different. It's novel but it's actually strategic. It hooks people in. It's necessary. Another example would be when we were having some technological difficulties last year with our wireless system – our Netbox Blue filtering system. There was a problem in there which was out of our control. It just meant there were some delays when we were trying to get our 1200 new devices working on the network. So I tried to explain to the staff using a bubble machine, a box and a piece of paper about what was actually happening in the process so that they could understand and help their students manage what was actually going on. People listened to the message. If it had just been delivered by an email or a benign 'This is what's happening', then maybe two people in the whole room would walk away with something. But most people walked away with a deep understanding because it was pitched differently. So that's a key success thing.

To present persuasively, you've got to deliver a message, if it's key, in a different way to what's the norm. You gotta build in an element of surprise - build in an element of the unexpected. Cause it hooks the mind in because we all suffer from continuous partial attention. We are waxing and waning with our thoughts and you've gotta hook people onto your agenda. You've got them for a short period of time and you've got to get maximum bang for your buck.

Most staff do not, in my opinion, value staff meetings at the school that I'm currently at. They see them as boring, un-motivating, non-inspiring and filled with secret hidden political agenda which people just don't want to connect with. I myself listen to the same message delivery, the same mechanical deliverer of the message. As much as you can say that we are professionals, you have to still break away and sell your message in a different and unique way and that is one of my strengths.

This perception of how messages should be sold in unique ways highlights the personal / social commonplace and it is something that Ned often comes back to throughout the study. At a later interview, Ned reflected on a recent whole school PD session that he ran together with the Assistant Principal Teaching and Learning. This PD session was necessary, as part of the expectations of New South Wales schools is that teachers will be required to take a roll each lesson. The school had software that would make this job easy for staff to perform, which Ned had to introduce to them. I was present at the PD session and remember the interactive, dynamic and entertaining delivery approach that Ned took to 'hook' the staff.

The approach was there was an opportunity to use two allocated professional development days at the end of last year. So I took a very different approach which was acknowledgement that our staff meetings are not valued by most of our staff. So I took a very different, highly engaging and interactive presentation and it was quite confronting to a lot of staff. But that was the point - to get people on board and listen to the point.

I was on the stage and it was confronting and there were staff members to be frank communicating with one another and putting the gun symbol to their head indicating please shoot me in the head. I'm not lying about this. This was a candidate who was recently going for a job in Middle Management and he signalled very overtly to his colleague that he was somehow friendly with on the other side of the room 'End this now, I'm over this.'

It was interesting that even though it was presented in a daring and decent way and was commented about by our principal at the staff function the next day - about how impressive it was. There was a very very high rate of participants' attention. And after eight weeks of holiday break it was planned to have a refresher but it was still dealing with a system that some six weeks after that that, I'm still correcting errors by staff. So for instance the coding of 'not in class'. I think that was really communicated that was to be used for periods 1 through to 6. And homeroom was simple. Click between present or absent and 'not in class' was for periods 1 through to 6.

The regular staff were I thought really thrown out of their comfort zone. A number of staff commented to me 'Is this what your class is like all the time?' And I said 'Elements are definitely like that – challenging, multidimensional, different to sitting there and summarising.' Which is the main mode for

especially Year 11 and 12's, and the students are reporting back to me that they want to see different and much more engaging lessons. While they are compliant for most of the lessons, they're dissatisfied with the quality of the lessons that are offered. That is reported back to me and documented in our surveys. And anecdotally through conversations with the students.

There were no requests by any staff members for me to personally revise how to do it (the portal system). So one could make the assumption that the communication I made was very clear but the evidence shows that it wasn't because staff are still making very elementary mistakes.

So my plan about that is that's really a procedural administrative function which is not in my position of responsibility as such. It's really the job of the student services position and I've been offering advice to the person who is now responsible for that but the problem is because there is inadequate skill level of ICT skills there and at the deputy level it still falls back onto me to correct. My management plan is just to correct the mistakes with them or even without them knowing depending upon who it is. I'm just making a judgement call. If I think it's just a one off error - I'm not talking about them I'm talking about those who are consistently coding incorrectly. And it's interesting that I'm trying to use a coaching model. So I said to someone's homeroom

partner 'I think you can coach your partner and say don't code it this way, code it this way'. And they have reported to me 'I have told them but they choose to ignore me.' So it's very difficult situation. And has nothing to do with pedagogy that has just to do with administrative tasks.

Ned holds regular meetings with staff for Professional Development as well, that is timetabled in to each staff member's load. Over the course of the study the focus of this PD changed considerably. Early on, the focus was on a range of packages that staff could incorporate into their classroom packages. Podcasting was one of the techniques that was covered. It evolved in an interesting way in the school.

It's interesting that the Professional Development that I've provided this year – it's been perceived as earth shattering by a lot of staff - is really old technology in my mind. So if you think about the SAMR model. So the lowest level of that is just substitution – my view is that creating a podcast is a substitute for a normal speaking task because the technology has been around for ever and a day really and it's really simple to do. But for the people that I worked with and showed them that, who have never seen it before, it was not a substitution activity it was at the highest level. It was a redefinition. It is something that they would have never thought of doing. It was just mind blowing that you could actually do this and as a result the uptake in that particular activity becoming a formal assessment

task was so profound this year and it's really interesting to see that.

That podcast activity was deemed by most of the History staff who participated as a successful assessment activity. However, when it was mooted as rerunning the following year, it was a different story.

The Head of the History faculty - I had no involvement with them but the Head of the faculty decided to create a global perspective assignment which included some podcasting components, and there were some issues with that assignment that were not related to technology but it was the length of time that the marker took to mark the assignment …some 13 weeks. That included intervention by a number of staff. So the task itself was deemed to be a failure because the feedback and the marks took so long.

So this year there has been a coalition formed where a very long serving staff member and a relatively new staff member have got together and formed a coalition and have decided not to undertake the podcasting task. It was touted that the podcasting task didn't allow students to learn how to present in a traditional PowerPoint. So that was accepted as a reason not to do the previous year's task and do something else. So it was touted 'Let's do a traditional PowerPoint presentation where students present.'

So it was thrown back to the task designers, 'What are the other students going to do when they are sitting there having to view 29 other 5 to 10 minute presentations? What about the down time?' The coalition had not really thought about that.

There was a real resistance that they were thrown back a pedagogical challenge which is 'Why are you allowing 29 students to sit there and have downtime?' The second pedagogical question was 'What specific things are you going to unpack to ensure that the students know what an effective presentation looks like?' And there was a real shutdown in that conversation because there were pedagogical challenges put forward which the coalition had no real response to. In fact, they were trying to use their power base and not undergo the podcast exercise but they didn't have an adequately prepared pedagogically backed alternative. That's symptomatic of the problem.

The last sentence describing this issue as being symptomatic of the problem was a common theme in Ned's struggle to get staff uptake of technology in their classroom practices. During a mid-study interview, Ned described a short term plan to introduce the staff to a program called Literatu, which again was being introduced due to a combination of temporality and place commonplace considerations.

Short term plans are still under development, but would be targeting just one new platform and consolidate skills in that

area. We really are very interested in a program called Literatu which we think meets the needs of our particular staff. It is very easy to digitise a learning experience and to get fast student feedback and data and so my short term plan is to just target that one thing.

The package allows staff to quickly mark work and look at trends and patterns in the analysis of the data that is returned. A number of fortnightly sessions were dedicated to Literatu. Ned planned a number of sessions around this package.

This year I want staff to have a realistic alternative to the current Learning Management System. Which is to add the Literatu system. And then an idea that instead of hosting documents in Moodle they can put them in the cloud. That would be my best hope. Getting the staff to that position. So having gone through and seen the alternative, and having worked in that space, getting staff to feel comfortable in that space - learning the elementary skills, and challenging those staff members that need to go and take the first step to move into that space.

My plan is to have a transitional strategy. I'm going to have a strategy of Professional Development once a fortnight as before. That is what the Leadership Team want to see. My assessment at the moment is that given that time is available, given what I'm capable of doing, it's probably the best out of all the other options. It's not ideal but it's the best that I can hope

for weighing up everything. So that's the plan we'll see what happens.

When I later checked on Ned and how this PD was progressing he described quite an interesting development.

The Professional Development has been about a Learning Management System alternative, so in my mind what has been clearly communicated and I think I said it at least five times is that the current Moodle system is at a standstill at the moment. And all we're doing is taking out some of the administrator's tasks and run it through the appropriate place. The next thing was to look at Literatu which is an alternative and I've explained I think in those professional development groups that what we're trying to do is explore the use of this product because our ultimate aim is to reduce the marking load if we can and move our focus from marking to analysing the results. The reasonable person would look at what's been presented and go I can clearly see why that distinction needs to be made.

A number of staff did not see the point of learning another package. This resulted in frustration and a lot of negative feedback about the fortnightly sessions.

So what transpired in one of the particular meetings was this negative dialogue. This staff member has very low skill level and indicated that they have low skill level. A reasonable number of that group were unable to login to the system because they

could not identify that their email address had something wrong with it. So they were really frustrated that they couldn't log into the system.

Again, that is a low, elementary level of ICT use and they were wondering 'Why are we bothering to learn a Learning Management System when I can't even login? Why can't we just continue with eAccess?' So the message there was broken record technique. eAccess is staying. You can still use it. But at some point you do realise that we will have to make the decision about its current form. Whether that means an upgrade. Whether that means a new system. At the moment we would like our staff to be able to function with the Literatu system because regardless of what we change to, there is pedagogical merit that is very profound. The time taken to design a task is not that great, for a great net return and that is what you want with the system.

This frustration manifested itself in more threatening ways as well.

At the Professional Development session that I had a couple of days ago the mood was grim and it has been highlighted in the fact that I've had problems with my own health. In the last two weeks I've had a run in with a Year Coordinator who couldn't understand an instructional video. The run in involved them physically poking me - dominating me. There are other staff

members as well, who've been poking me and pointing at me in a very aggressive manner.

Ned looked upon this incident in a philosophical manner as is shown in his reflection below.

I get told a thousand times that I'm doing a great job. But that doesn't take away from the fact that I have a colleague standing there using the F bomb and poking me and making me the butt of their problem. Now I use my professional judgment and know it's not about me but the reality is that my humanness means that I still hold onto those emotions. And it was a power play and I don't think there would be anything that would remove me from that and I think most people would walk away from the job because the remuneration doesn't cover all the stuff that I have to put up with. And it is really interesting that the Deputy recently commented the Principal had exercised great leadership at great personal cost and I thought that's my daily experience.

The unhappiness of some staff towards PD Sessions and the direction of Technology within the school led to an email being sent to Ned describing these frustrations.

There have been a number of complaints like serious claims by a core group of very long-standing staff members who are very concerned about the direction of actual learning in the school and who are trying to reposition themselves in a power struggle

with myself and the Learning Coordinator. About two weeks ago I received a three A4 page email from the nominated spokesperson on staff who holds a position of responsibility, outlining their experience of technology in the past decade. It has not acknowledged any communication whatsoever with the staff about strategies to do with the portal or anything to do with online Chronicles or with the overall strategies of the Learning Management System. The whole email was extremely negative. There was not a positive communication there. It did not target anyone in particular but it was definitely orientated towards the Assistant Principal of Teaching and Learning and the eLearning Coordinator.

It had everything in there - like it was more of a reflection on that person and the group that they had nominated themselves as the spokesperson for. It was a reflection of their technological level. So in it was a gripe about having only just mastered the 'Bookit System' and now they have to make bookings through iWise. It was a traumatic experience. They didn't like the fact that our Moodle system has a shelf life and what to do. They are not sure as they've spent hours and hours and hours building resources in the Moodle system and that to pull it would be a big mistake. It's interesting because I've looked at their Moodle system and there's no questions, no interactivity. It's just a document repository all they have mastered is the uploading of documents which is the lowest benchmark in my mind.

The email emphasised that all staff are really concerned about the direction. Everyone is really struggling; no one is using technology in the classroom.

Ned countered that this email was way off the mark in relation to what he was seeing in the school.

There is a global all-encompassing language, which is so far from the truth because the circles that have been vocal to me are demonstrating that there is significant uptake of devices in our system. We have a range of staff members who are now Vodcasting as mainstream assessment. We have many staff members who now have mainstream embedded into their programs that are not essay forms, that are not examinations.

The claims are really unfounded. I'd say that he would represent about 16 staff members. I think that it's a core group of people at a very high level and part of their personality is to be very dominant over other staff members – a whole range of different ones.

I'm still formulating strategies but the first thing is to call a meeting with the Assistant Principal Teaching and Learning and the new Head of Staff Services because it's all part of this constant theme of pushback. Staff have, for whatever reason, this embedded culture within the school that the moment some change comes about, the pushback is 'I need more Professional Development.'

Due to all of this push back by some staff the focus of the fortnightly sessions changed as Ned explains.

So the PD sessions in Terms 1 and 2. They focused around Literatu and pocketed in that we talked about flipped classrooms. In the end there were about five sessions with the basic sessions on Literatu and how is the program working, and then in Term 2 there was a bit of a mix. We looked at embedding multimedia. So I looked at an activity that was using the flipped classroom. The flipped classroom style was received quite well because the majority of the staff had not heard of it. Those that had heard of it - it was a chance for them to reconnect with it. That was quite positive in terms of the uptake.

Because of some feedback given by staff, we tended in the last half of the year to change tack, so in Term 3 we moved away from eLearning and moved towards some other Professional Development items - so Teacher accreditation and what the PD landscape might look like for the following year. What that culminated in was at the end of the year everyone was given a continuum of classroom practice, but written for (our College) in terms of eLearning. So everyone was given a portfolio of what the AITSL descriptors would look like at all of the different levels and then we gave them in that same folder what would that look like in terms of the eLearning components.

Ned did consider the Literatu PD did achieve some successes.

There were clearly some staff who did take it up in time. For example, Frank Wallis started using it. He thought it was great to do quick marking of assessment and then a really great analysis. The Science Department were really pushing it. They really enjoyed it and I think the reason why they enjoyed it was that that textbook they have comes with a teacher resource pack that has pre-made tests ready to go in PDF format and all they had to do was quickly map the answers. They were using it in the end to really analyse where the students were and were using all the little data bubbles.

We did in the end, in combination with the makers of the product - they actually gave us a trial of some business intelligence tools for NAPLAN. So instead of having to go into Smart Data and see trends in patterns, what we were able to do is every time you created a class in Literatu, it gave you a new NAPLAN bubble showing where [our] students were for that. The bigger the bubble the more trouble the students were having for that area or skill. So that was one of the things that we used to show staff how they could use that data and that was received very favourably because it was so much easier than having to trawl through the government's Smart Data portal which is incredibly cumbersome to use.

I think in reality my assessment was that people did notice that it was useful and that they knew that if I was sharing it, that it's quite difficult to argue against. Fundamentally it makes the

brief of what you are being asked to do with all of the AITSL Standards and modern pedagogy and data analysis. So it is completely on the money in terms of research.

This issue of an undervaluing of Professional Development in the area of eLearning by staff is just a manifestation of the attitude of the Leadership Team towards such PD. When asked about whether the Leadership Team did take part in the PD that Ned offered, he offered this insight.

The Deputy was in a group but chose not to attend nearly every occasion, because he had other school business that he had to attend to. The Principal was invited but didn't avail himself nor did any of the Senior Leaders avail themselves of the opportunity except for the Assistant Principal Teaching and Learning who has relished in them. I have already flagged through official performance review channels that that is one very critical area. Our leadership team needs to focus on, having addressed a range of other issues over the last 5 years, and that moving into a new strategic planning phase that the pedagogical agenda needs to be overt from the leadership team.

So effectively, the reason for that is that often the leadership team give a counter message to the one I am talking about – through their example, a lack of role modelling and what they communicate. So they often communicate inadvertently and they may not actually be aware of it. By things like 'We still have to have traditional activities because the HSC [Higher School

Certificate] is a pen and paper test' and on one level that is true, it is physically hand written, but your hand doesn't do the thinking. What we need the message to move towards is 'The HSC is a thinking test and involves critical thinking and evaluation and that develops through a whole range of different activities, one of which is handwriting'.

The difficulty there is the way that our very long serving staff members who are the bulk of our teaching body at the moment- they hear that message as: 'That is an out for me. I do not have to develop my own pedagogy. What I have been doing is successful. I still can get band 6's the old fashioned way and the Principal has given me an out because the HSC is a handwritten test and that is what I am doing. I'm meeting the Principal's agenda.' No matter what else he says, no matter how much support he shows for the curriculum team, no matter how much support he shows for professional development or staff days or whatever is on offer, that is the out because it comes from the highest authority.

This impediment to Ned doing his job is not the only one that he cites in relationship to the commonplace of place. A big issue that he sees is the way that the profession of Teaching is structured and the practices that are accepted in the Education sphere.

I think staff attitude – I think that the mood swing throughout the term and the semester is a very big factor, so when I

describe it like a teacher is being like a rubber band – they stretch themselves and the school stretches them with extracurricular, examinations, marking, tight deadlines, a very limited school day regulated by bell, very, very tight constraints on the day to day job when term is in session. And then when teachers get stretched the first thing that they do is snap back like a rubber band into older habits. So the first thing that they do is to go back to their default position, so normally that will be a paper experience, text book work, a video, very low ordered type activities – busy work and that can go on for weeks and then the end of the term comes then you have a 2 week break then you try to restart the agenda again. That's a very difficult environment to work in because there are some points throughout the year where you cannot put forward a message. A common response will be 'You expect me to listen to all of this when I've got all of this other stuff to do', so the human condition can only handle so much.

In my mind the model of four terms of 10 weeks working time does not lend itself to making change. Something has to change. What stays stagnant is that operational model. We have the uptake, so logic would tell you we need to look at the operational model and it makes sense because you cannot have staff turning on and turning off doing their core business and then also developing at the same time. There's not enough room because teachers already working more than the 72 unionised hours that Australian workers are generally meant to work. The

payoff is additional holidays but it doesn't work - it's just not enough to get the change that we actually desire.

One of the things that I would say particularly in Independent Schools is that something has to change. If you want to be able to do the technology then you have to be prepared to negotiate the arrangements of the time to do it. You have to build that in, in some shape or form.

There is not enough time within the timetable - that's already taken up with core business. We have to think differently about a model of working that may mean we have to pay people more to compensate them for less holidays. At the moment the holidays are the compensation, but these are the decisions that have to be made if we're really true about engaging 21st century learning elements. Until that happens I don't think we're going to see the level of integration that we really know ought to be there.

And I would suggest that the root cause of why meetings are not going to transpire in terms of pedagogical development are to do with the very high rate of mental illness amongst the teaching staff - because the business model generally doesn't fit what's being demanded. If you have a staff that has got 39 periods a cycle plus their marking, plus their duties, plus their normal administration, there is no more time left for PD time.

Something has to change. Either we pull back on what teachers have to do which isn't happening because we are adding more, or we have to change our model and that's going to be not very palatable because the payoff in the industry is to have holiday time as the pay back for the additional time over the eight hours that teachers generally work every day. I don't think the barrier is the will of staff. They have good will but it has been exhausted. The problem is the business model doesn't suit what's being expected or demanded.

Added to this Ned spoke at length about another issue within the Education sector which also impedes his ability to do his job.

Because I do view my job through the corporate prism, the biggest thing that I noticed when I entered into education generally is that in Corporate if you have certain KPI is that you have to meet you have to make them because if you fail a performance review then you're dismissed from your job because you haven't performed. Contract has ended and it's standard practice to offer a corporate employee an opportunity to improve. There's a very tight timeframe on improvement and if you fail to make that then you're dismissed from your job and that has a ripple effect which says from the beginning you had better up skill yourself and take on some initiatives to avoid those performance management type scenarios because you are going to lose your job and then you're going to get a poor reference.

I think it could be useful for Education because in Education it's the opposite. It seems to me that when you are inadequate in your job, you're not really held to any account. You are termed 'dead wood'. The concentration goes onto other hopes and aspirational teachers and you pretty much stay there until you retire or you do something inappropriate. The union is perceived as being such a strong defending force that Leadership Teams are often reluctant to actually act.

A prime example of this is that at my previous school there were three highly incompetent teachers who taught technology - Software Development and Design and a range of things and the school tried to move them on by counselling them out - putting on pressure, demoting the Coordinator back to a teacher. There was no dismissal and the teachers knew that they could keep doing the same thing and they didn't leave until eventually redundancy was offered and then the wrong person took the redundancy. So the school is still left with incompetent teachers because they would not dismiss them. They chose not to move down that line.

There are other examples that I know. In the current school where I'm at there are members of staff who hold positions of responsibility who have been shifted sideways rather than being demoted. Demotion was not an option. It had to be sideways shift even though they were grossly incompetent in their position - their core position of responsibility. In

Corporate that would not happen and as a result a well-known position is that it is quite difficult to dismiss a teacher because we somehow provide a sheltered workshop.

We also do the same thing for support staff. There are a number of support staff in my opinion that are employed by particularly Religious schools. They provide these people with employment because they know that they wouldn't be able to be employed anywhere else. So they provide a sheltered workshop arrangement and then whinge and moan about their incompetence but are not prepared to do anything and dismiss these people.

As a result, that creates more stress on the entire organisation. My strongest view is if the school was really engaged in dialogue about what is good pedagogy and what is expected we would have much more uptake of change if there was accountability which resulted in dismissal. That sounds really harsh but it's what the corporate model is and why businesses are so successful. You have to also apply that to the education sphere. Why is the same not true?

This inability by the Leadership team to hold staff to account flows back to what Ned was saying earlier that when staff demand more Professional Development, further staff training is the usual solution rather than holding staff to account for their own professional development.

Staff have, for whatever reason, this embedded culture within the school that the moment some change comes about, the pushback is 'I need more Professional Development.' So it comes down to a key staff member who has not been taking their roll seriously. They have consistently opted out and the claim was 'I need more in-servicing on how to take a period roll in class.' Which is an elementary intuitive thing to do. It is not a difficult thing to do.

The leadership team accepted that that person needs more training instead of holding them to account and saying 'You ought to have taken the initiative as a professional and find out how to do it and if you had any doubts you ought to have independently found out how to do that.'

Asked whether he thought this indicated a lack of support for him and his role Ned said that he felt that there was support from the Leadership Team.

They are supporting me but in my mind and it is the same in the last school I was at. They do not know how to hold staff to account. I'm not aware of any other profession that would allow staff member to put forward that as an excuse and for that to be entertained. If you're a dentist and you didn't go by normal protocol and did a filling incorrectly and a complaint was made to the dental authority that dentist would be held to account and there would be some professional reprimand. For some reason our professional standards are so low that in this case

this teacher was allowed to get away and not to be held to account.

Another frustration Ned identified in being able to adequately do his role was the lack of discussion within the school related to pedagogy.

I think there are two current issues. One is an avoidance of the current system because of their skill level and the other is a lack of professional dialogue about pedagogy generally. To some degree I think there is a problem there, and that is that the school doesn't allow pedagogical discussions to happen because we have inadequate, poorly planned, poorly led, poorly developed leaders doing lunchtime meetings that don't even have the full complement of faculty members present. So it's a self-fulfilling prophecy. If you don't meet well then you're not going to move forward. If you don't meet well the power players who have exceptional ability to use their power are going to take over and that exactly is what I see time and time again.

I put forward, as a Learning Coordinator, a plan to the Executive to seriously consider changing our meeting pattern from five in a year to having a regular Monday afternoon, 3:30 to 4:30 meeting which seems reasonable with extra curricular built around that because we really need it. If change is really what the Leadership Team is after, then that's what they need to back it up with. It came back to me 'Thanks, but no thanks. We decided as a Leadership Team not to attempt any dialogue

with staff about attempts to have it and it is deemed by the Leadership Team that we have adequate time already.'

My response back to them was thank you for considering it. I don't share your view and again I put forward my physical evidence of my meeting patterns and still claim that there is not sufficient dialogue and meaningful dialogue for us as teachers to move forward as a staff. It is a self-fulfilling prophecy and it comes down to institutional views that are outside of my control as e-Learning Coordinator. What that means is there's going to be a very low level of improvement because the institutional model they are now working from doesn't allow for anything else.

This lack of discussion did impact on systems that were in place in the school. One system in particular was the Moodle system that needed to be replaced. It was only being used by very few staff and then predominately as a repository for data rather than an interactive learning environment. As the version of Moodle was quite old, it was quite a big job to restore staff stored data, and deemed a waste of effort given that many staff had not used the system in years. A few staff were keen on continuing to use the system. Ned described the decisions surrounding the upgrade of Moodle in this way.

Basically it was closed. We closed the old one because we did an analysis and it was just no one really using it for anything except for a document repository. So basically it was completely inactive. When I left, the IT department were left

with the decision. They decided to pull down the old Moodle site, put up a new Moodle site with the latest version of it. All they were going to do is that for the 5 users of the product, they were going to restore their courses in the newer version which basically didn't cost us anything to do in the end. We didn't tell staff that it was a brand new intranet. We hosted it and the reason why we decided to host it was basically to get over a technical glitch for the library to get a single sign in service for 3 or 4 update subscriptions that they had and that was a way around it.

My replacement was given the task of 'Where do we go from here?' Because the pedagogical decisions have not been made it's quite a difficult decision to go 'Which product do you want?' Because what are you going to base your decision on for the school? Do you base it on the tool or do you base it on the need? Even if you did want the tool, what is the point of having it if there is no overarching pedagogical reason for having it?

This did lead in to a discussion regarding one of the successes that Ned achieved during the timeframe of the study. It has already been mentioned that a new portal system was being introduced to comply with current education expectations, particularly with regard to lesson by lesson student attendance tracking. The system that the school put in place was an extension of the iWise system that they already had.

Most staff are probably using the iWise and Igloo portal more effectively than what they would any other Learning Management System. The Portal and Igloo was firing. The large proportion of staff were using that because it was dead easy, low technical skill, and it was a point in time thing - I need that document loaded for that lesson. And it had probably the highest uptake of anything that I have implemented in the school. The uptake was something like 95%. Everything that you needed to know was right there in front of you. Igloo is just the name of the product that ran the student portal. It was the students' and the parents' view of the portal. There was heap more coming. iWise is now for sale in the United Kingdom and Civica, the people who own it, have pumped in a whole heap of information to really develop the product. So there is heaps more development coming.

The system allowed staff to put homework up for the students as well as see homework that the students already had. It reminded staff when homework was due, allowed them to attach files to homework and so on. It also allowed staff to 'log' lesson plans. It became part of the school policy that when a staff member was going to be absent, they needed to post their cover work on the iWise portal system. This was incredibly popular with staff, students and parents. Students could easily see the work they had to do that lesson, parents could see what homework their sons had and staff could prepare lessons quickly and easily. The system also provided functionality to print out evidence required by the new teacher accreditation process that many staff were already part of, and all will

soon be a part of. Whilst this would be regarded as administrative work, staff began using it as a pseudo Learning Management System.

There were a number of other successes Ned achieved during the course of the study. One was the introduction of a one to one Personal Learning Device (PLD) throughout the school. Initially this was restricted to students in Years 7 to 9, but soon became a whole school strategy, with a Lenovo device for the junior years and a Surface Pro 3 Tablet for the senior students.

I think the key success that I've had really is in device roll outs. That has always been – I've done several of those they've always been schmick, executed with precision, commented on as being highly professional. Communication with parents outstanding. I think that's been really really a key strength of mine.

The uptake of staff integration of the PLD's into their pedagogy has also had some success.

There was some really good successes particularly with the Junior School from managing projects right through to actually coming through to fruition, and then a brand new program has been written for Term 1 this year (2016). And I understand that that was rolled out with a high level of commitment from the Year 6 teaching team. Through the Senior School I don't think that there was any noticeable improvement or uptake. There would be some pockets of high level use and some redesign, but I would suggest and from what the kids suggest,

that basically a lot of staff were not sufficiently planning robust activities. So they were being used as research tools - mainly substitution with pockets of something higher.

Ned also counts achieving pedagogical change among his achievements, despite the number of impediments that he identified.

…achieving pedagogical change despite all of the barriers that I can set myself particular targets about what I want to see in the place and that actually happens. So for instance when I've developed a professional development plan about what I was going to cover I can account for where that's actually happened in the classroom.

I've seen it happen, I've seen it formalized. I've worked with staff. It's actually transformed from development into an actual opportunity for other students outside of my own class so I think that that's very successful.

It's formalized in one small longitudinal survey that the eLearning committee designed in the second year of my current appointment. It is a very quick brief survey of staff that we can measure development along that SAMR model. So we do collect some data so we can track change over time to an extent. The difficulty there is trying to get formalized feedback from staff is very difficult because most

unfortunately take a nonsense approach to it and they become outlier responses even though they are anonymous.

So the reliability of that data in a formal sense is not great. We are using a Google form. It had to be very quick, very simple. Unfortunately, we have staff who think it is appropriate to fill out every box whether it's appropriate or not so we've had to discount so many survey responses as being non serious attempts because the data in it is all over the place. So we've had to constrain the pool a little bit to those who have taken it seriously. More soft data will be coming though performance review where unsolicited colleagues are given an anonymous email that I do not nominate. That is they are nominated on my behalf as part of that process and I know that I must be achieving the outcomes of my role description because on my recent survey I was one of very few staff members being reviewed in Middle Management that received nothing less than the highest or second highest rating on every aspect of the survey. So I know that I must be doing well.

Anecdotally I keep my finger on the pulse. These collegial conversations 'What are you doing? How have you done it? It's really great. Do you want to debrief about what has happened?' so I get a sense of what was happening. Today some people in our professional development meeting have reported back 'I tried what you said, it worked really well.' So you get that good

affirmation back that it actually has transpired, but more importantly from the boys.

They are really keen to tell you to stop teaching the teachers things because they're having the same things replicated in other classes and they don't like that – they like to think that I'm the only person doing something special with them and that other teachers shouldn't know how to do that. So to me that's the biggest indicator – so 'This is happening in my Physics class. You taught them that didn't you sir?' So there's no motive behind that except for the students reporting back a learning experience that they are having to endure. So I get lots of feedback from a variety of different circles.

Another more recent success was the introduction of a Mini Teach Meet session at the end of the 2015 year. This was instead of regular Professional Development sessions, which were usually earmarked for this time. Ned, together with the Assistant Principal Teaching and Learning and the Head of Staff Services, devised the event. It was a successful event even though staff didn't get on board in quite the way that was desired.

The idea was that for the end of the year timetabled Professional Development we wanted staff to share within groups and with people who they had been working with for the entire year something that they had used in a classroom which they thought was of value to share with others.

A problem was the timing of the actual professional development. The last few days of the year is not conducive to professional learning. So that was a big factor. Part of the result of that was that we asked a range of teachers to showcase what they had been doing with some teaching and learning activities. So the Head of Teaching and Learning asked a range of different people to present and only four people agreed to present in the end. One of which was me. One of which was the Junior School Year 6 team representative. So again we were in a position where our colleagues were not really prepared to speak or present in front of their peers.

You could choose one of two. A nano presentation - just two minutes. No slides. Just talk to it. Or you could do a seven minute lightning presentation. So most staff actually chose the nano. About three quarters of the staff, despite advertising, despite reminders, came unprepared to the sessions and thought that the Mini Teach Meet was going to be a session to explain what the Teach Meet is not that they would be participating in it.

This was a real surprise to the organizers because we all were so clear. We had posters up. We sent people emails. We spoke about it at briefing. I even did an individual reminder Powtoon to remind people about what was expected before the session - a couple of days before and still we had people who came unprepared and so they chose a nano. It was fine. They still

said something but it was a traditional type task rather than something to do with eLearning.

The staff said that they really enjoyed hearing what was happening in other classrooms with people who they haven't worked with so generally that went down very well.

Ned remained positive about his ability to make a difference with the uptake of ICT tools in the classroom by the teaching staff. He mentioned a couple of ways forward related directly to the combination of the commonplaces of temporality and place.

So discussions that I've had with the head of staff services has been very productive; we have listed a whole range of different initiatives that we might be able to implement. There are some issues. The actual standards that are going to be initiated by 2017 will mean that all teachers are monitored by the standards. So we're looking at a range of strategies including Middle Managers and Faculty Coordinators initiating meetings with other schools so our staff can share and find out what other schools are doing and also expose our staff to what might be the norm elsewhere. That's one strategy.

Another is peer observation. That's going to be mandated in 2017 but we're thinking of bringing it in much earlier. There are no official peer observations at the moment at school. The hope is there, and it sounds unkind but it's truthful, our staff need

to be made aware that peer observations are going to be mandatory and some staff members may opt out and take retirement early. There needs to be a cultural change and this is going to be very difficult for some, especially underperforming staff, who haven't been held to account for a long period of time. So that is going to be an ongoing challenge.

In his final interview, Ned expanded on this plan by intimating that in order for the Principal to judge a teacher as proficient, then a lot of the pedagogical practices that he was trying to put in place would need to be demonstrated by the staff.

There is a plan in place that was going to be discussed by the Leadership Team. It involved a continuation of those observations. And other professional learning like Learning Walks or a Research Project and then there was also discussion at the Leadership Team level about what would merit the Principal signing off a teacher as proficient. Those discussions are on going and I wasn't really privy to any of it because this was at the time when I resigned.

My understanding was that the Principal had asked the Head of Staff Services to present to him what she believed would be necessary for him to consider when determining a pre 2004 teacher as being proficient. The Principal was definitely taking it seriously about his obligation to declare a staff member proficient. There is a lot of angst among staff who are pre 2004

and it is easier for them to be in denial than to accept that they are going to have to be declared proficient.

When questioned about these ideas as ways forward how they seemed to be outside of his role within the school Ned responded in the following way.

They are outside of my role but I'm forced to go beyond my role in order to do my role. I often find that I'm advising the leadership level right down to the support staff. So the role and the remuneration and the description in no way describes the reality. It is actually a very challenging role that requires very frank and open discussions.

These frank and open discussions come at a cost. Focusing now on the commonplace of the Personal/Social dimension, Ned had a number of thoughts about what were necessities in order to do his job effectively. Early on, he identified his relationship with the Assistant Principal Teaching and Learning to be key in his ability to do his job correctly and identify what the school actually saw as its priorities.

…at the current time that is the Assistant Principal Teaching and Learning who really I'm working with as a Deputy to that role. And that is important because my role is dependent on the overall curriculum agenda of the school and we have to be seamless on that front. We both have to be pitching the same key messages and not disparate in any way shape or form because technology in the end is just the tool but the more important part is the pedagogy. If it is going to result in

improved student outcomes, then we have to be aligned 100%. Even if we have a disagreement we have to find middle ground and make sure that we are on the same page.

He also saw the necessity to build strong relationships with the staff if they were to trust him and follow his lead in incorporating ICT into their pedagogy.

The most important aspect for me is the relationship with the teachers. My role as eLearning Coordinator is quite varied but the core part of the job is to work with teachers in order to upskill them on the one hand and also to introduce them to new technologies to offer them different pedagogical experiences for their students – in an eLearning environment… It is good that I am approachable and then my view is that translates to a trust value and as I said before that relationships are at the core of the job and then that is where you get a lot of leverage when that teacher is planning a pedagogical experience using technology and they are seeking a deeper level of assistance and coaching in how to implement something in their classroom.

One of the issues repeatedly raised had to do with staff not wanting to attend Professional development sessions. This has been discussed in some detail already; however, Ned did provide some strategies that he used to deal with these types of issues at a personal/social level.

Sometimes I am very flexible. It depends on how dominant the character is. Sometimes in the sessions that I'm running there are certain people that come and say I'm so incredibly stressed

I'm not going to listen to what you say. My fallback position is that I just excuse them because inevitably what happens is that for those people that do turn up they are at high risk of being subjected to a very negative berating by that person which does more damage than the loss of the person for that time.

So that would be one of my key fall backs. I know that that is viewed by some staff as being 'You've given them an out', but in fact it is more harmful to the overall agenda by having someone in the room who can project a very negative message. I've recently experienced that, where a staff member came into a mathematics faculty session, totally unprepared, didn't know what was going on and hijacked 15 minutes of a session despite being constrained by 3 or 4 other people in the room. Basically being told to be quiet – let's move on, and that was 15 minutes of dead time that just turned everyone away from the key message of the day.

So that's one of my fall back positions because I've experienced that so many times that it's not worth it. Both with me as the leader and also being a participant seeing that person hijack the experience. The other one is to be empathetic. To acknowledge, yes it is a very difficult time but to also offer a challenge.

So one of the things that I try to do if I can remember and often it is an in the moment ad hoc thing, is to try and say - 'Think about strategy here. It is really not the micro thing here

that you're talking about. It's more about a longer term way of managing this.' I'm trying to counsel them and coach them. I can't take away their problem their issue, because we all have them, but I can coach them about being able to handle that. It's actually about people management, human resources what motivates people, coaching, conflict resolution and a whole range of other things that I've chosen very specific professional development in, in order to do my job.

I've done very specific things on mediation and negotiation with teachers in an education focus. I've done conflict resolution. How to specifically pitch and reduce conflict. Coaching, how to coach somebody and what's a realistic expectation. I've also done some management courses. It's about how to be proactive and to try and manage an issue before it becomes an issue. Part of that is persuasive presenting that I've done in industry as well.

I've also used from my own wife – she's gone through an extensive management training program over a year and I've read all her notes from a corporate perspective on values, coaching people developing people and managing people. I did this to inform myself as to how I can better manage teachers who are going through an enormous amount of change. At the core of it, the job is about change management and that's why the relationship aspects are important.

Ned was quite forthcoming in describing the effect that having to deal with all the issues discussed here were having on him personally. His health was being affected to such an extent that he had to seek professional help due to the stress he often found himself under.

I do have my own private medical issues. I have a psychiatrist and psychologist. It's partly to do with my personality but it's exacerbated by my work. I'll be open and frank for the purpose of your study. The latest advice that I've had when I recounted behaviours from staff members when I recounted working conditions, when I recounted decisions made by leadership teams. The very clear advice that's been given by my psychiatrist and by my psychologist have both been to resign. I haven't taken their advice but that is their clinical assessment based on impact of my mental health.

A lot of it is out of my control and when I hear the immature responses from adults that I work with their clearest advice has been to resign. Both. Their advice has been to resign from an Independent School and move to a Department School. In their assessment, they regularly see teachers from Independent Schools suffering mental illness and their acumen based on the patients that they see is that Independent Schools and Catholic Organizations generally, outside of that, so healthcare and social work arms of the Catholic Church in particular, is that they significantly overwork individuals and have grossly inadequate institutional processes and systems

and woefully inadequate leadership. That's what they said to me. I don't necessarily share those views but their assessment is for me to be kind to myself.

Asked why he didn't take the advice of the professionals he was seeing and seek another job, Ned responded in this way.

Well I do need the money. I don't feel like I want to give in. I feel that I can initiate some change. I try to role model what it can be like and I feel that I do have the ability to effect some change. The eLearning Coordinator cannot do their job without the higher levels supporting them and for me that's not really happening.

And my assessment is that at other Independent Schools it is not happening either. The peers that I deal with and I have a mentor at another Independent school would all be in a worse situation than where I am. So it is pretty dire. So, yesterday I went home in a state of very high anxiousness and it took a number of strategies and medication for me to calm down.

Ned did formulate and act on some strategies related to his relationships with some staff members. He described two such strategies when asked if the negativity at his school abated or continued.

I think it did tend to resolve itself and certainly with me. I implemented a few strategies where that was managed. It was

interesting that with some of those things when we spoke last they were more directed to me and my role and the work that I was undertaking.

In the latter of part of the year the same people started similar behaviour with some other members on the Leadership Team. There were a few staff members that I had to really pull up personally and it was interesting that some of those staff members were having deep issues with change generally. Some of their behaviours that were being shown to me started being shown to other members of the Leadership Team as well.

One of them that I can remember is that I had a courageous conversation with one person and just put it to them about their behaviour and how it was inappropriate. I was lucky that that person recognized their behaviour and was willing to accept that they had fallen short of the mark in terms of the professional behaviour. However, that didn't stop the behaviour from manifesting itself in other shapes and forms later in the year.

In fact, one of the relationships basically ended up in complete silence at the conclusion of the year - not even a 'Goodbye Ned' when I left, so it was pretty dire. Another relationship that I was trying to manage was a person who just point blank refused to engage and had used the lines 'I've done this all before I've been a coordinator overseas in an international school. No one

ever listens to anything that I say and I just don't want to be involved.' So I invited that person several times to hook up into the conversations that were going on - to be part of a working group that had been called by the Head of Staff Services and that person just point blank refused any further involvement. But their behaviour didn't continue in a negative shape after that - possibly I think because they had been called out on it.

Ned did finally take the advice of his healthcare professionals and sought another position. Whilst it is outside the scope of this study, it is worth noting that his new role is quite different and he seems very happy with the new focus that his professional career has taken.

I have no responsibility for pedagogy apart from being involved in faculties. I'm not leading any pedagogical discussion. Basically the only thing that it really involves related to my last role is some technical skills because one of the things that I have to do is help facilitate the design of the new website for the School because the old one is in real need of replacement… and using skills that I have, in like writing different policies.

Analysis of what Ned said will take place in the next chapter. I was unsure about how much of the negative aspects of Ned's role should be included. My reasoning for including a fair amount of it is that it was necessary in order to be true to the narrative that Ned was telling and experiencing at his school. Hopefully the reader will appreciate that there are many aspects of the role of an eLearning

Integrator that are very difficult to contend with, especially regarding relationships with staff at all levels.

These place, time and personal pressures influence to an enormous degree the narrative that is told. It is important to lay them bare to the reader. They are essential in understanding the decisions, the restrictions, the boundaries and the emotions that the participant has to deal with in order to do their job. This sort of data I feel provides the rich descriptions of the phenomena in order to develop an empathetic understanding of the world of others (Maxwell, 2005; Rubin & Rubin, 1995, p. 35). They also help to strengthen the case for Teacher Identity to be included in the TPACK framework in some sense. They highlight the importance of one's identity and how much bringing about change is dependent on what the eLI or classroom teacher is willing to push or support, regardless of the obstacles in the way.

7.4 Steve

Steve works in the State school system. He is at a secondary college that is broken up into two distinct campuses that are separated by about 5 km. The Junior Campus also has a separate extension that caters for students with behavioural issues. Over the course of the study I visited Steve at all three sites. He often travels between campuses several times a day. He has a tech assistant who is also a trained teacher, the idea being that one of them will be available for assistance at most times.

Steve worked initially as an electrician, and moved into teaching quite late in comparison to most in the industry. He believes his background has really helped him to effectively carry out the position he is in. His official role is eLearning Head Teacher. A discussion about his background arose when he responded to the question "Do you base your role on any methodology or philosophy?"

None. I just made it up. I was a sparky – an electrician in the railways. I've been around in a few different roles. I got the opportunity to going to head office as IT support. I went in and said 'This is who I am. This is what I can do.'

They were desperate. They took a chance and it worked out. They got rid of all the staff except for me. Then I moved into another role and then I moved into another role and I really loved it. We outsourced our network to HP and there was a lot of change and every time there's change you get a chance to learn a lot.

As a project officer I was in charge of the project office which was reporting of all our IT projects and that was like $33 million for the year and that was pre-Y2K. So that was a fair amount of coin back then. So you used to get a great deal of exposure and I used to go off and run mini project within the project itself to support the Project Manager. So you got a great deal of exposure from knowing the administrative side and also the support side. There was more money involved than now and It was a tighter more rigid environment.

I think the roles are very similar in that you make them your own. Some people call it smoke and mirrors. Some say it's bullshit, but I just tend to fall into the roles that I just made up and you've just got to respond to what the needs are at that point in time. If you have an understanding of what your manager needs and then if you can appease that, it really doesn't matter what the role is or the title is. If it's tangible it's good.

Steve is in an interesting situation in that his role has been temporary for the entire time that he has had it.

This is my third year acting as eLearning Head Teacher. Acting, as in not appointed. My standard position is classroom teacher. The position was originally created for a character acting in different roles and he needed a place to call home so to speak with all the changes in the Department. The opportunity presented itself for me to have a crack and I've been acting ever since. So every year I go through the process of 'Do I get another crack at this or do they advertise it?'

When the school went to staffing they said 'We want this role.' They were told 'We will give it to you for three years and then will review the role.' So it's a very fluid role and the role is created because of the College being two schools. They get extra periods or hours and they can allocate them towards programs. For example, in the overall campus they have supplemented a Deputy's role, so they have three Deputies. The school itself, with a formula based on the amount of kids, doesn't need three deputies so they've taken some of that allocation and put it towards a Head Teacher becoming a Deputy. So this role has come about from that. No one has done it before. No one was in it. There were no preconceived notions or expectations other than you've got to improve the ICT levels and outcomes for the students. Across the board.

Before moving to his present school, Steve did work in a similar role in a school in Sydney and also as Computing Coordinator at that school. When asked about the temporary nature of the position he seemed quite philosophical.

It's a very fluid role in that you need to respond to the senior executive they are your clientele. When they going 'Will we keep you on for another year?' You have to make sure they're happy. And at the end of the day the feedback from them is important because it gives you a more global perspective on where you need to be.

I don't mind being in the role that I've got even though every year I have to go through the rigmarole of 'do I have it don't I have it?' It doesn't even worry me because in a worst case scenario I would go back to teaching and I like teaching. I teach computing and multimedia and all the nerd stuff. The thing is, I entered the industry wanting to be a teacher. I enjoy it so for me it's not a step backwards. For some people - they just don't enjoy teaching but I happen to go alright at it I think. This role here is one that people get really jealous about. And they carry-on. Because I don't have a teaching load per se. I don't have a playground duty. I think it's a really fantastic job. It's an awesome opportunity and I love it. My skill set moulds well to it as well. I particularly like my job.

There are a number of issues related to the position that Steve identified which can best be described using the lens of the commonplaces of narrative. Among the main issues that Steve faced when coming to the school were issues where the Digital Education Revolution (DER) played a major role.

When I started the only people that used the computer in the classroom were if you went and booked out a computer lab. No one else did. And this is after the Digital

Revolution. The Digital Education Revolution did not take place unfortunately. It just was thrown upon them (teachers) and there were no resources or tools or foresight in trying to manage that.

He later described it in this way:

We're finding that the DER program was not successful for various reasons. Primarily because the staff were not on board to accept the technology. They wouldn't embrace or make it part of their practices. The department threw it at them without any support.

Steve faced many issues related to the DER as well as how staff perceived the Department's push into all things digital. In order to get around this Steve convinced the school executive to put in a system called 'Central'. It is a School Management system with an emphasis on student management. One of the features of it is that it allowed for taking of rolls every lesson. This was a very important component in effecting Steve's overall plan of increasing the use of ICT in the classroom.

We've got high truancy here. We've got to have a system in place that works. When I first came here laptops were just something that was in the drawer. So I went for a snow trip with Roger the Dodger (The Studies Coordinator) and I said 'This system is here so archaic'. Because I came from another school which had a good system, I told him 'You've got to use Central. We can do this. We can do that - and it's web-

based. You can centrally manage it blah blah blah.' And he goes okay.

So we put that in and then right, staff are going to mark a roll every lesson. They had to go find their laptops and dust them off and charge them. And next thing they're like 'You know I could probably do some research and start to use this. And hang on if I use that data projector...' So it was just a slow process. And now with the proliferation of data projectors throughout the school it's almost a full time job just maintaining them in itself. There wouldn't be too many rooms that don't have a data projector now.

So that was the major catalyst for people to start using technology. Let's just say that Sherry has to go on leave, which she will do. It's easy for someone to come in and use the technology to mark her roll. It's mandatory. It's our official documentation. So that's been a great way to introduce people to technology.
We have got a thing called 'Period by Period'. So they mark the roll electronically every period. It gives greater accountability. If the parent rings up they know whether students have been to class. By enforcing that, it's like a legal requirement for a classroom teacher to take a roll therefore it meant they had to take the laptop with them.

So just by the mere process of taking the laptop with them into the classroom they started using them. They can research things. They can supplement their teaching with music videos - the whole gambit of stuff. That promotes their ability to differentiate their teaching. Also they can

see the use and the benefit of having technology in the classroom. Whether it be didactic or engaging whichever way you want to look at it – it still made the teachers be able to teach better. So you fundamentally have to have systems in place to allow teachers to do that.

Not only do systems have to be in place but also they need to be simple to use, need to save teachers' time and they also need to require minimum effort. Steve gave the example of a failed attempt at technology in incorporating the Moodle system effectively.

Teachers don't like change. So when you introduce change and are potentially bringing in new systems all the time, you've got to understand that there's a fair amount of fear and trepidation involved.

For example, Moodle was a big push early in the early years and there were thousands of hours of professional development and money thrown at Moodle but the reality is it hasn't taken off. It doesn't work and it's too clunky. People don't like it so in those sorts and situations you really put people on the back foot because they know 'I'm not going to waste my time.'

The fundamental issue with teachers is time. They are time poor and you've got change management happening and you've got to sell 'How I can implement that ICT into their lessons?' And do it easy without spending thousands of hours. You're always going to get those teachers that like technology and who and will do it anyway and they're

creative and inventive. You've got the other ones that just won't and so you've got to coerce them.

One of the main strategies that Steve uses is to create Faculty Champions to reduce the amount of time that he needs to be working with staff who could learn from others. This is part of a bigger picture that Steve sees about the role that he has. His strategy is based around getting systems in place in time, and then move on to something else, leaving trained staff to manage the systems that he has implemented. This is something that was part of the strategy at Freight Corp and something that Steve has seemingly successfully implemented into the education sphere.

Back in Freight Corp we would always have a Go-To-Person in a key business sector to try and up-skill them and help them out. And you help them out say depending on the faculty. You always try and support a person- Go-To-Person, which, depending on the school, is quite difficult. And the reason for that - the reason why you want that is to have issues resolved on the spot. If you give power and train people to do things then that's less time, less frustration, less anger. Look, it is about building capacity in people. You essentially want them It's not just change management - you want to increase that capacity so they can be Semi-autonomous. Or autonomous in that environment.

As I said before I build the system but I want people to manage it. I don't have time to run around. I don't want them to look at me as the administrator look at me I'm

amazing. I want them to utilize it, for it to develop under their prowess because they're the ones using it. I just want to encourage them to embrace it. It depends on your strengths and who you are. Some people love to build their own castle and maintain it but I'm of the opinion if I can build a reputation then I can take that anywhere. I can go to another school and I can say I can do this. I can give your staff the systems and blah blah blah. As opposed to you know they can't work without me. That's just dumb. We are all replaceable...in particular me.

If you don't have a robust network to support your infrastructure, then you're screwed to start with. We have that in place now. And I've put in an enterprise network so we have got teachers who work at both campuses and they can get access right across the network. And that's an issue because every time you go to a new place, if you have to learn a new system then that's downtime...frustration.

I've basically set that system up and then I show staff how to use it. The way that I see my role is to set the system up: I train key players on how to use it and manage it, and then I move on and do another one. For example, at the moment I'm putting in the recording system at the Senior Campus. So the expectation is that I'll go in set it up, train the staff in how to utilize it and manage it and then I'll go do something else.

Due to the number of machines, staff and systems that are in place over the three campuses, Clarke has outsourced the running of a number of key systems in

order to free him up to concentrate more on serving the needs of the staff, rather than the needs of the systems in place.

I guess the most important bit in getting traction having programs in place, a stable infrastructure, the teachers to leverage off to be able to use and utilize the ICT skills and technology in the classroom. Every school decides how they want to run their own network. We moved over to Regional IT support, which is departmental, so it's a more standardized environment. It places less stress on the coordinating teacher to support the file server and the networks, and a whole raft of support issues are just taken out of play.

Each campus has a computing coordinator and they are given an allocation so it's all done in house. I've never done the computing coordinator's role at either school but I've done it at a previous school where I was at. You get to understand the ins and outs and the issues and the trials and tribulations of supporting that. Moving over to a standardized environment means that there is less downtime less requirement on a particular person.

This year I've been hamstrung by two unmanaged network systems and just trying to keep them afloat. For me a lot of the operational decisions ... you don't know every subtle little nuance - and then you get caught out. Because I set the system up at the other campus, you come here and you are not worried or stressed. It's just a matter of going through the process.

All our systems have to be in warranty. If it's not in warranty we don't have time to pull it apart. You shouldn't have massive downtime and in that respect we can get through the work. (demonstrates pushing out a program to a room). We call upon experts because you need to have experts to sort some of this shit out. They have degrees and training in the systems. And because they're a team, they have got time to go and learn this stuff. So we go 'We have got nothing going here.' They come in and they sort it because they've probably seen it at another school. They know just how to fault find and get it sorted and off you go. So that's our support model.

Depending on the severity of the issue, they could come out straight away. They're based fairly locally. And because of the way that they have got the centralized model now, the Regional teams have got less power. There's less need for the regional teams to have their own involvement. Each regional team used to have their own set up. Now they have gone back to this centralized model for the Educational Technology for Learning (ET for L).

The department have said that every primary school should have this system. They would ring up the primary schools that didn't get on board and force them to get on board because they didn't have the expertise. And with the high schools they've been developing it. But we got on board because we need it. So I go down to the principal and say 'Guys, it's like this. There's two of us and there's all these

systems. My role is not to be a technician. You don't pay a Head Teacher to be a technician. That's just a waste of money. So we need to get on board and we need to get on board now.'

With the freed up time that he has, Steve still spends most of it working with staff on administrative matters rather than pedagogical ideas. During one visit, I witnessed him working with a support staff woman who needed help filling in a template. He described to me a number of the strategies that he has to put in place to support staff to do administrative tasks.

You try and put people in a position where they can be autonomous. It's all about systems to me. So that letter – you saw me editing that letter. Well I've trained that office lady about 20 times on how to edit that letter. You don't need me. You've got the power to do what you want to do. It's an over reliance. Every now and then you have to draw the line and go 'No, you need to go and do this.' Or I'll put together a little how to guide. So how to reset a student portal password. So don't send the kid up to us. They normally just want to get out of class. As a classroom teacher you should have the ability to reset the password yourself. So I give them that ability so that they have that access to reset student passwords.

So you need to have that support in place like the how-to guides for them to be able to do that and have the confidence to do it with the students themselves. And it's fairly effective because they don't want to send the

students back down to us. It's not about Nancy and I building a castle it's about us getting that knowledge out.

However, he does get some time to work with staff on Professional Development that is more pedagogic in nature. This extended quotation highlights some of the thinking that Steve uses to underpin his strategies. It also reflects the pragmatic way in which he undertakes his role as well as the frustration that he feels in trying to get staff to incorporate ICT into their classroom practices. It starts, surprisingly with students who are not even at his school yet. A major consideration in his role has been to cater for students coming in who are going to be bringing technology in with them in the form of Chrome books from one of the feeder schools.

So why the Chromebooks ...well I don't want kid sitting on a device in the classroom playing games. It needs to be educational. Once again a parent goes to me why do I want to buy a Chromebook. And the answer is that when they sign into our domain they can only get on the apps that we want them to. They only get to see what I allow them to see. And the other idea here is that a staff member in geography wants to use an app. I then get other geography teachers involved from both schools. Talk about the app or types of apps and then we can do some professional learning on that app and how that can be used at both campuses and possibly the primary schools. So you keeping that knowledge base in-house. It means kids that are in your class can then go to my class and I don't have to retrain them. And that was my reasoning behind that. So this is a big thing that I'm going to push out. The kids in

the primary school own them and they going to be turning up at our place so we need to be able to cater for that.

Also the teachers are able to get their own apps put on the devices so they can explore them. So that way I start to get Shane the faculty champion on this app to go deliver the professional learning so that everything doesn't have to come through me. I don't need to be that driving force. I need to facilitate the process but I want the teachers to take ownership. Fundamentally that's the toughest part of this job. To get teachers on board to drive it.

My goal right now is to promote the transition from partner primary schools to the Junior Campus. And also trying to change the perception that teachers are not using ICT in the classroom. However, it's fundamentally true. It's a difficult perception to change and a tough one and in many ways you can spin your wheels in trying to get that.

The hardest thing for me is that you don't get designated time for professional development in ICT with staff. So the professional learning will be offered after hours. So it's difficult to get some traction. I think because we've built up a number of systems now I've got the opportunity to push really hard. And I think that because we've got a Principal at the partner primary school saying 'This is the perception and this is what you've got to change.'

I've therefore got carte Blanche to go okay I want to get these Year 7 teachers and say 'This is what we're doing. This is the program.' Whereas, before it's been you try this,

you'll try to roll something out. And it's only one of me and a hundred and forty staff. It is quite a big undertaking and if you look at the support issues as well it can be quite a large undertaking. That's essentially my measure. It's great to be able to respond when a teacher is saying 'I want this app I want Facebook blah blah blah.'

Essentially the primary goal is to improve the ICT outcomes for the students with the underlying vehicle as the teacher. And I put in programs to affect that. There's a number of tools or strategies that I'm looking at implementing but the primary one is using Google apps for education. There were a number of network changes that will limit our storage. Google apps for Education is a suite of tools you can use to communicate and collaborate easily all the time between students and staff and get feedback. It's free so the question of equity is always there and that's a solution to that.

The pragmatics of teaching is such that you need to be able to get things done then and there. If it doesn't work it doesn't work. You've got to try make things as seamless as possible and that work. That's where web-based technologies are good. This is where I'm driving everyone. That's why the Google apps are good. It's free. it's web-based. For example, I went and helped out with the HSIE teachers. They wanted to do a video editing project. They wanted to produce something. And video files are really quite large so we did some interviews with people and I videotaped it and they're large - massive files so generally

speaking if you want to get a class of say 30 kids and I had to copy that file which is gigabytes worth and manipulate it with a video editing suite that was compatible with the desktops and the laptops then that would be quite an ordeal quite an undertaking and it would probably take down the network.

So this is where I brought in Google apps for education. There's a product called We Video. It's an app and it hooks in at the back end with Google Drive, so this whole cloud computing concept. Everything gets saved to a data centre in blah blah land and these tools sit at the back end so. I spent hours uploading the video footage then when I shared it to the kids who have got a Google account it zipped across within five seconds. And then they can open up this web tool and manipulate the video footage - it's got a bunch of really simplistic tools for transitions and so on. Not only could they do it on the desktop, they can do it on the laptop. They can do it at home and if they do it at home kids can get engaged and this accommodates all their needs.

I was there on deck, on board to help them roll through the punches. Essentially it was not planned particularly well. They went well as in I was there to support them. Which was good because I could see the issues. The only fundamentally technical issue was installing the chrome browser and that's because the desktops have got the old version of Internet Explorer.

The actual We Video comes with tutorials that the kids can follow. So the downtime for the teachers was minimal in that it was so easy to use. It took the pressure off them. You get a couple of kids that know what they doing. They can go show the other kids. And then they show the teacher. And the teacher walks in and says 'We're going to do this' and the kids go 'Yeah awesome. We know how to do that.'

That's the goal. To take that pressure, that anxiety away from the teacher to actually think about initiating that. That's the major impediment. I think it's quite an intimidating environment to be a teacher. To get exposed when you don't know what you talking about. Because kids will take that opportunity to take the piss. Especially someone like a 16 year old version of myself who fully tore a teacher apart and enjoyed it. So I understand what that's like and relish in it and it's fantastic. You don't want to put someone in that environment. You really want them to succeed.

The commonplace of temporality features in this except from Steve. He often talks about what is going on at this time; in the classroom, in the local area, in the school administration's plan. Throughout the study, Steve's lack of time to get everything done became a feature of his narrative and a major consideration in the decisions that he had to make on a daily basis. Steve tries to leverage the result of the systems that he puts in place to drive further change and bring the staff along. If staff can see that students are being engaged and showing true learning with the use of the ICT's, then that strengthens his case for further systems. The previous quotation refers to the use of Google Classroom as a

system that will allow Steve to help staff to help the students to engage with ICT by making it easy for the staff to implement a collaborative cloud based resource that could be used across all curriculum areas. The key in his view is that the system has to be able to make a positive difference to the students' learning and to staff effectiveness without requiring a huge amount of effort on the teachers' part.

If you can give them something as seamless as that – when it comes to people doing other projects and managing how they do video editing they can upload stuff and do it at home, then they can show mum and dad. They don't need to have the Adobe Premier Suite at school to use it. You know it's not mystical land – it's a web2 tool. If you can leverage off those web2 tools it's so much easier and it's more cost-effective and they get to showcase their skills and talk themselves up. The teachers love and relish the opportunity for the kids to be the drivers … if they're good teachers.
You can be a magician but who gives a shit if globally you're not making a difference. I don't think I've kicked as many goals as I'd have liked to have done. I'd really like to spend more time with teachers in the classroom. At the moment it's a low percentage about 20%. So I've built resources.

Let's take Photoshop for example. I go and build some resources. Because students can spend four days looking for pictures. So I go in to show functionality. Then I will take that class and show them how to do it and then give

the confidence to the teacher to take that through the next time. So I still have got the resource - the Captivate Video that takes them through step-by-step. I use it as a teaching tool. I stop, pause, talk about it. The teacher gets to see the questions that the kids will have. What does this mean? How does that work? Without any pressure.

This is more 'I've got an assessment task and I need to be able to do this,' rather than team teaching which is more regimented. So I can develop with them a unit of work to help support their assessment. So you've got the pedagogical side and the administrative side. And I spend a lot more on the administrative side than the pedagogy.

You've got to have that support, that infrastructure in place on that platform to leverage upon to develop those systems. So say Google Apps for Education. You can spend hundreds of hours learning how to use it but it's great to leverage other people. So there is me and another local High School and the primary school. Just us, testing it out. That's good - I don't mind doing that. That is a true level of success if you can pull that off. At the same time, it can get a little bit intimidating because if it doesn't work then you're the one to blame.

Not all Professional Development of the staff is driven by the needs of the students. Staff are surveyed in order to ascertain what they perceive as their needs regarding professional development in general. All three campuses of the school try to cater for these needs through a two day in-service time.

So the format's like professional learning. Anything from using Adobe Captivate to any new programs, so Google. How to use Google Drive and set it up, Photoshop, any of the ICT skills. It's driven from the staff. So the staff will do a survey and they'll say what they want. So I set up the survey but the Senior Exec – they collate the data and they work out what they want to run. All maybe I put in the new system. 'How do you utilize it? How do you use it?' So I do reports. That could be in staff meetings. That could be an after hours session. I run about four sessions a term I'd say.

That professional learning is across the board as in you are going to different areas not just ICT. You're just one of the components. One, it's what they want and two it's a matter of providing staff with training on what we need them to know. So you could say it is just-in-time. The after-hours sessions are programmed in advance so you know about a term in advance what you've got to run in the next term.

We have a learning conference for two days and the staff are surveyed on what they want and give their feedback and from that we can develop our professional learning strategies for the school. The Senior Executive make sure that people answer the survey so they do take it seriously. So you get at least 80% (staff responses).

When asked who he targets with professional development to become his technology faculty champions Steve responded in this way:

I aim for the soft belly. Right now it is still a work in progress. In the past you just know the characters that are going to help them. The HOD's don't see this as a part of their role. In the past I've just worked off a request system. They want me on board to implement a unit of work. So I'll go 'Okay. What are the requirements. What's easiest way to do this?'

This is usually where I can get to say 'You know we can use this Google system – the Google Classroom' and then the next stage after that is these Chromebooks and the whole gambit. So that's how I spend my after-hours. Working out how I'm going to utilize those systems to help those teachers. Then I can go 'Right we're going to get all your stuff and we're going to take it off the network and we are going to put it on here (google classroom). And this is how you access it, and this is going to be what you use from here on in and these are the reasons why.'

There is an amount of legacy equipment at the campuses, courtesy of the DER, which Steve has to deal with on a regular basis. He spoke at length about the issues related to incompatibility with the department issued laptops, particularly related to loading drivers, which would work with his Pay as You Go printing solution, and dealing with various versions of Internet Explorer and Windows throughout the campus. There were some positive spin offs from the DER including the school being able to keep a number of sets of laptops. This came with its own set of issues, which Steve explains below, including a novel approach to housing the class sets of devices.

In the last year of the DER program we got to choose whether to hand the laptops to the kids or keep them as a school resource. We had 280 at this campus and sent 80 across to the senior campus. So we have got them as class sets and they do get used a fair bit. One set got destroyed – a teacher came in who wasn't so rigid with the class and the kids were popping up all the keys. The thing about vandalism is that if you see one device need to be fixed you got a fix-it straightaway because otherwise the kids will see that and mimic it. It's like graffiti if you see graffiti on one part of the wall you got to get rid of it straight away otherwise they're onto it. So out of 25 machines we had about 15 damaged and I can pinpoint the teacher and they're lazy and they just don't give a shit.

It makes it really difficult to manage resources like that because you want to share them and at the end of the day I'm advocating technology and to do that you've got to have it and it's got to be working and it's got to be there. So taking advantage of those laptops was a great idea. To move them around we have these Coles trolleys – we are kind of famous for it. So instead of getting those 2 ½ thousand dollar trolleys we just rang up Coles – and they said 'Yeah you can have them. How many do you want?' So they gave us six or eight.

The use of Coles trolleys for housing and transporting laptops around the campuses would not work at all at any of the other schools that were part of this study. However, it seems to be a perfectly reasonable solution at Steve's schools.

This is possibly a further example of what he describes as department mentality – doing everything on the cheap.

Steve relies quite heavily on the expertise of others. From what has been presented already, the reader would be aware that management of the systems that are in place at Steve's school is the responsibility of a number of groups. He uses faculty champions, outside consultants and Department gurus to help him in this job. Steve also has an offsider, Nancy, who helps in the day to day running of the systems across the three campuses. Nancy is a trained teacher who has taken on the role of assisting Steve in most facets of his job. With over 600 machines and 3 separate sites, this is imperative to the smooth functioning of the whole setup.

Steve also has other people within his Professional Learning Community that he can call upon in order to bounce ideas off or learn from. He also attends conferences and presents at them. In the below extract Steve describes who he works with, where he gets his support from and new ideas and also provides an insight into how he found collaboration and sharing of resources and ideas within the teaching profession when he first joined it.

There are a few forums like the New South Wales Computing Coordinator Forum where you get to see issues in typical places. You go to conferences. I presented at a couple of conferences before. One was on boys education. ICT. Implementing ICT in boys education successfully. That's always good because you get to think about what you've

got to talk about and then you get to gauge feedback from the educators on whether that's valuable or not. The last thing you want to do is piss in the wind or reinvent the wheel if it's already done. I get to go and liaise with some characters like Bill from [another college]. He's like one of the guys that, if you want to know something about IT. So I know Dave. So I get him on the phone - meet up and spend half a day and get some relief time and sit down and go through 'What have you done? What do you know about this?'

The idea is to build up your little network. The other day I went to [another high school]. They're doing some work on Google. They're sitting there rolling out Chromebooks. So it's a matter of setting up relationships with them, discussing issues 'What do you think about this? What you think about that?' Tom Smith. He would be another one from [another high school]. He's a Head Teacher Administration. He's an IT guru. Good on the iPads - so the whole networking thing you've just got to do it.

One way to be smarter is by getting feedback from other people. Bring in IT support. Have good relations with them. You'll investigate things and might provide advice to them. So when I set up the Fujitsu Paid Printing Solution I wanted to set up printing from the laptops. So I worked out how you can, and then I showed other schools how to do that. I think what's really interesting is the psyche of educators, in that they don't want to share their resources - they hate it.

So when I first started teaching - I'm a late bloomer obviously. I've only been teaching seven years now. The most startling thing that I found was New South Wales has thousands of teachers. I thought that as a beginning teacher there would be a plethora of resources to start with...and there just wasn't.

'So here you go. You've got to program your own lessons. Here's the syllabus.'

And it's a very daunting prospect particularly when you've got kids. And I think that's the psyche that's been carried through all the way. Irrespective of what role you fulfil. I don't have that. I think it's just fundamentally stupid and dumb.

Due to the nature of the school being spread over three campuses, Steve is in an unusual situation when considering all three commonplaces and how he views and works with the senior executive of the College. As already stated Steve looks to the senior executive for support in all the systems that he puts into place. However, this can be somewhat of a balancing act due to the specific needs of each of the campuses.

Principals are not managers who have come through and done a business degree. They are teachers who have come through and have some administrative skill. They don't have the necessary skill sets to say 'We need to do this and we need to roll it out this way.' It's difficult for people to appreciate what needs to happen and if you don't have that

shared understanding then you're not going to get things done and sometimes you are just spinning your wheels and it's very difficult.

They'll all have their own agendas and this is where you've got to balance the needs of both schools to put in reforms yourself. So you've got to drive something. You've got to applicate it. You have to go to both schools 'This school's got to have this, this school's got to have that'. You've got to convince them. You've got to be compelling and then once you've convinced them that it's a great idea you've got to put in place.

If you're contributing and you're being strategic and responsible and assisting the Principals and the Senior Executive on the challenges of IT and how we resolve issues and ways forward, then they're going to go 'He's okay.' A lot of them aren't tech savvy at all so they rely a lot upon you and your advice. And the thing is you go to them to garner support for the driving force. And the executive here are not tech savvy at all - they need to be slapped around. They're like Dad's Army.

So I spent a lot of time developing and planning this push out and so I go and spend a lot of time with the Deputies and the Principal. You guys have got come on board. I'm going to take you for an hour before school. Here it is this is what it means this is how I think we can utilize it and the strategies.

The support that Steve does get from the Executive allows him to do his job and provides him with the confidence to implement the systems that he feels can add value to the teaching and learning within the college.

And the Principal was going 'Yep Yep Yep I want you to show this to the executive.' I want you to look at their body language and if they're being negative we need to pull them aside and say 'Look you're part of a team and we need you to get on board with this.'

Regarding the commonplace of the personal sphere, Steve is quite forthcoming with how he views himself and his relationship with the staff. He is somewhat self-deprecating, admitting that he is his own worst critic; however, he does follow a few basic tenets to help him to connect with staff at the necessary level in order for him to be effective in his position. He summarises himself in the following way:

I talk to everybody. I know everyone and I liaise with everyone. It's a question of 'He's a nice bloke with a good smile.' They come and see me and I go see them. What's really intimidating for people is technology. They don't like it. So when you introduce change and potentially bringing in new systems all the time, you've got to understand that there's a fair amount of fear and trepidation involved. You've got to have a certain amount of character or persuasion or sensitivity to accommodate change or fear in people.

My persona is quite jovial. Nice and approachable. People can say and feel what they like about how they're feeling

about situations without fear of incrimination. If you can't manage change it doesn't matter what your technical prowess is, it's useless. You'd be just spinning your wheels and getting nowhere and being ridiculed for it.

Steve's view on 'building castles' has already been described; however, it is worth repeating here as it is a major philosophy in his approach to his job, his relationship with staff at all levels and his realistic view on what he can actually achieve at the school. He credits a lot of this ability to his time at the railways, having to deal with people in a help desk scenario.

I need to take a very composed and impersonal view on people when they come to see me. Just because of their desperation and anxiety.

That was a great thing about starting with the railways on the helpdesk. You get all this anxiety – people ring up and they want to vent. They want to blow your head off. They are sick of this issue and they want it fixed. And you need to fix it now.

Pat Rub Pat Rub.

So you understand that pain and you don't take it personally. And if you can do that, then at least you helped them out.

I spent quite a bit of time with Steve and so experienced a number of interactions between him and the staff. He does get bailed up every time someone sees him.

It appears that everyone has a question for him and he is usually quite forthcoming with an answer immediately on the spot. Alternatively, he will reassure staff that he will look into their concerns (if they are not able to be resolved in a few minutes). Steve was also quick to point out that he was a focus of my study. This did give me some insight into his relationship with a number of staff. A couple of examples are given below which highlight the way that he is viewed in the college.

"I'm trying not to laugh. If you can find the man. He is also known as the Yeti. He's been sighted but hmmm I'm not sure." Female staff member

"We call him the seagull. He only appears when there is food on offer. I threw a chip at him last time he attended a staff luncheon. Everyone thought that was pretty funny – we all knew what it meant." Male PE staff Member

His personal philosophy is best summed up by the following observation that he made when asked about the politics of the place and how much of a role that plays in what he is attempting to do.

And here's the difficulty with this role. In order to advocate this technology you need to have a robust system in place. It doesn't matter what sort of level of work you do and what sort of fandangle ideas you have unless you've got the technology to support it forget about it. So that's what we've been doing – putting the systems in place that are reliable. It's got to be an absolute no-brainer. And the

teachers are just scared. They're intimidated by the technology.

The approach that Steve takes to his role is based upon this premise that putting systems in place that are easy to learn and that empower teachers is the best way to achieve his mandated goal of increasing ICT literacy in the students. He tends to be able to read teachers from an outsider's perspective due to his experience in the corporate world. He has taken what he learnt in industry and applied to quite successfully to his role, supported by his personality and his love for the job that he does.

7.5 Concluding Remarks

The reader should now have a feel for the study participants. I have tried to describe each of them in terms of the three commonplaces of Personal practical knowledge, place and temporality. The reader will have already surmised that it is somewhat difficult to categorise a trait, experience or contributing factor as purely relating to one commonplace over the others. Often it is a combination of thee commonplaces which allow the reader and the researcher to be able to express the narrative that the participant is offering. There is an amount of interpretation together with a knowledge based on my personal relationship with each participant, which has allowed me to provide these insights into each of their identities.

The next chapter of this study will look at answering the study questions articulated at the beginning of this whole process. The reader should have some

insight into the diverse situations, knowledge bases, and pressures that each of the participants deals with on a daily basis. It is hoped that the analysis that I make and the conclusions that I draw, will be regarded by the reader to be valid constructs drawn from the narratives that have been supplied in this chapter.

Chapter 8 Analysis of the Storied Identities

The four research questions that this study addresses are presented again at the beginning of this chapter. These questions attempt to make sense of the various elements which can affect the decisions and actions that an eLearning Integrator undertakes in their daily activities. They can be broken down into the following constituent parts:

- Theory of the accepted knowledge, represented by the TPACK Framework
- Perceptions of the position and the clientele being served coming from eLearning Integrators' past experiences
- Actions taken by the eLearning Integrator in the course of both their day to day activities and future planning which reflects 1 and 2 above and which also serves to inform the same.

When a cohesive and cognizant analysis of the constituent parts is undertaken it should lead to the development of a clear pathway or scaffold that can be used to inform other eLearning Integrators of the possible courses of action that they could take in order to achieve ICT integration in the classrooms of teachers in their field of influence.

8.1 The Four Questions

Four research questions were proposed in Chapter 6 to guide the research.

They were:

1. How, if at all, are eLearning Integrators' storied identities related to their perceptions of ICT for learning and teaching?

2. How are eLearning Integrators' storied identities related to the TPACK framework?
3. How, if at all, do eLearning Integrators' storied identities influence their support of teachers' adoption of ICT for learning and teaching?
4. How can knowledge of eLearning Integrators' storied identities be used to guide them in supporting teachers' adoption of ICT for learning and teaching?

Each of these questions will be addressed in turn in order to allow for the coherent and logical analysis of the data gathered. The basic premise of this chapter is to show that identity is the primary element in the process of ICT integration. Identity is formed by a combination of the knowledge that one has together with perceptions that one brings to the role being played. This identity is guided by, and guides, the actions that are undertaken by the eLI. By looking at these components together, we may become informed about the scaffold or roadmap against which future ICT integration can be plotted.

8.2 Question 1
How, if at all, are eLearning Integrators' storied identities related to their perceptions of ICT for learning and teaching?

It is somewhat difficult to answer this question directly as the participants were never directly asked what their perceptions of ICT in Teaching and Learning actually were. This avoided getting back a rehearsed or formulaic response, but it did require a more in depth analysis of what the participants were saying by their actions and the undertones of their responses. The mere fact that each participant has taken on an eLearning role in some way and stuck to it for a

number of years, suggests that they have an underlying philosophy that ICT can be useful in teaching and learning and a belief that it should be something that teachers incorporate into their pedagogy. Given this, it is difficult to find a quotation from any of the participants which directly addresses the research question. In terms of this study, this does not make the question meaningless. Rather it allows me to look deeper into the responses that the participants provided in order to actually answer the question. The best place to start is possibly to look at the main issues that the participants saw in being able to actually do their jobs and work from there. Their storied identities certainly inform their approaches to ICT in teaching and learning as the following key issues that they address indicate.

8.2.1 The participants' background.

Looking at the participants who were included in the study, they can be loosely slotted into one of three types. Two of them, Sharon and Clarke are career teachers. Both have been in Education for the whole of their working lives. Ned and Steve both come from industry, but it is fair to separate them into coming from an IT background – Steve, and coming from a corporate background with little IT exposure – Ned. So, do their storied identities affect how they perceive ICT for teaching and learning activities? If we consider what data their narratives have supplied, we can gain an insight into their perceptions and draw some inferences and conclusions.

8.2.2 Steve – systems need to be in place that work.

Steve worked in the IT sector, working as an IT project officer and on the help desk for the Railways. Two themes often came up in conversations with him, one being that in his role he really needs to understand what management wanted:

> If you have an understanding of what your manager needs and then if you can appease that, it really doesn't matter what the role is or the title is. If it's tangible it's good.

and the other describing how he saw his role as implementing systems, training people in those systems and not creating a castle for himself:

> Some people love to build their own castle and maintain it but I'm of the opinion if I can build a reputation then I can take that anywhere. I can go to another school and I can say I can do this.

In other words, his goal was making people autonomous with the ICT they were given. In reality, he set up systems which required teachers to use the devices and then leveraged that necessity to start encouraging them to do pedagogic rather than just administrative things in the classroom.

The expectation in Industry is that if you are given a computer to work on to do your job, then that is what you do. You do not really get the choice of 'Well I'd rather do it this old fashioned way because I am more comfortable with that approach'. In Education, classroom practices are largely (but not always as we will later see) left up to the individual teacher. Even if teachers do not want to use technology as part of their pedagogy, they can usually still be very effective teachers. The best way forward, as Steve saw it, was to force staff to, at least, take the technology with them to each class to carry out mandatory roll checking. He

then ensured that there were systems in place and working reliably which made the systems more enticing to the teachers – things like being able to show a YouTube clip, being able to show a good web site for student research.

Steve used his understanding and attention to the details of getting systems in place that were educationally valuable and technically reliable. This, combined with the necessity to at least have a laptop in the room, gave the teachers the impetus and confidence to try out a few things. Many were things they were already comfortable with outside of their working life, like looking at YouTube videos. As Steve pointed out, his role is to continue finding new systems/applications that the staff can use and put them in place after testing them thoroughly:

Because I set the system up at the other campus, you come here and you are not worried or stressed. It's just a matter of going through the process.

He was a firm believer that the Digital Education Revolution did not happen because the implementation was all wrong.

We're finding that the DER program was not successful for various reasons. Primarily because the staff were not on board to accept the technology. They wouldn't embrace or make it part of their practices... It just was thrown upon them and there were no resources or tools or foresight in trying to manage that.

If ICT is to truly be incorporated into teachers' pedagogies then, in Steve's view two things were necessary. The technology must be available in the classroom

and there must be a safe environment where staff were confident in the systems that were put in place. The latter included everything from the expectation that each room would have a data projector that worked, to the expectation that when the internet video was clicked, it played without buffering or other issues. This view held by Steve is consistent with findings from studies such as Becker (2000, January) who found four conditions which led to increased computer use within a teacher's pedagogy:

> … where teachers are personally comfortable and at least moderately skilled in using computers themselves, where the school's daily class schedule permits allocating time for students to use computers as part of class assignments, where enough equipment is available and convenient to permit computer activities to flow seamlessly alongside other learning tasks, and where teachers' personal philosophies support a student-centered, constructivist pedagogy that incorporates collaborative projects defined partly by student interest—computers are clearly becoming a valuable and well-functioning instructional tool. (p. 25)

8.2.3 Ned – executive support is key.

Ned also came from Industry, but used a somewhat different approach to enticing staff to use the technology that was in front of them. He does not have the technical expertise of Steve, which according to Steve is not necessary anyway.

It's generally the case that if you're going to specialize in e-learning you don't need to know about networks and back ends. But it depends where you are and how much support you've got.

Again, each teacher had a laptop in the classroom and a data projector. There was also the expectation that staff would take the laptop to each class in order to take

the roll. If they had to cover another teacher's lesson, then that information would be within the computer system for them as well. However, Ned articulated that there were dynamic presentations of the systems in place that he had put together, along with strategic decisions that he had made:

You have to take a considered strategic approach to assisting someone and I like to use the term coaching because I'm trying to move away from 'Do this, do this, do this, do that', to more about 'This is how you might think about approaching it.

These strategic decisions were mainly about how best to deal with the staff to allow him the necessary leverage to get staff to incorporate ICT effectively in their own rooms.

There is no doubt that Ned valued the important role that ICT should play in Education.

It was more to do with my own passion which was about experiencing first hand better student outcomes and engagement with my own students through the use of the integration of technology into teaching and learning and that was supported then by a range of different readings that I undertook from John Hattie and a range of other different authors that were providing evidence that integration of technology together with high order tasks produce better learning outcomes and that is what I was experiencing and I wanted to promote it with others.

Ned modelled this passion and experience of the transformative nature of classrooms that use ICT in the hope of getting other staff interested. He had limited success in this approach, based in no small part on the real issue of why technology is not being incorporated into classrooms in his view. A number of conversations with Ned revolved around the broken nature of the Education system as he witnessed it in his school:

> To some degree I think there is a problem there, and that is that the school doesn't allow pedagogical discussions to happen because we have inadequate, poorly planned, poorly led, poorly developed leaders doing lunchtime meetings that don't even have the full complement of faculty members present. So it's a self-fulfilling prophecy. If you don't meet well then you're not going to move forward. If you don't meet well the power players who have exceptional ability to use their power are going to take over and that exactly is what I see time and time again.

A major result of this dysfunction was, according to Ned at least, there was a large number of staff who he considered should not be in the profession, and certainly not in the positions that they are in. He cited examples of staff whose inability to do even the simplest of computing tasks was excused by the executive as being an issue related to a lack of training rather than the teachers' persistent refusal to follow expectations and learn how to do even simple administrative tasks using the computers. This lack of willingness on the part of some teachers to perform such simple tasks made implementation of pedagogic change using computers as a tool to enact that change, well out of reach.

Thus, Ned saw the Senior Executive as a large impediment to his effectiveness in being able to get staff to incorporate ICT into the teaching and learning sphere of the school. It was not because the executive did not support him – they did. It was that they also supported teachers opposed to what Ned was trying to do by not calling them to account and making them follow expected procedures. Ned's perception of this may be due in part to his corporate background, which has a different culture than the teaching profession on such matters. He also saw the lack of interest in ICT and Professional Development by some in the Senior Executive to be another hindrance.

No the Deputy was in a group but chose not to attend nearly every occasion, because he had other school business that he had to attend to. The Principal was invited but didn't avail himself nor did any of the Senior Leaders avail themselves of the opportunity except for the Assistant Principal Teaching and Learning who has relished in them.

If Professional Development is offered on a technology and the Senior Executive do not bother to show up and learn it then it is a poor example that has been set for other staff and in Ned's view an 'out' for many. There is no doubt that this perception of the inaction or inability of the Senior Executive comes from Ned's experience in the corporate world. He talked at length about Key Performance Indicators (KPI's) and the importance of them in determining if people were working effectively.

Because I do view my job through the corporate prism, the biggest thing that I noticed when I entered into education generally is that in corporate if you have certain KPI is that you

have to meet you have to make them because if you fail a performance review then you're dismissed from your job because you haven't performed.

This perception that Education could do with similar checks was integral to Ned's perceptions of his being able to achieve the integration that he was aiming for. This same argument holds true for question 3:

How, if at all, do eLearning Integrators' storied identities influence their support of teachers' adoption of ICT for learning and teaching?

In a similar way to how Steve felt suited to the position because he had a great understanding of the systems and was approachable, Ned felt the same due to his corporate exposure to change management, effective communications, and the like.

It's actually about people management, human resources what motivates people, coaching, conflict resolution and a whole range of other things that I've chosen very specific professional development in, in order to do my job. So I've done very specific things on mediation and negotiation with teachers in an education focus. I've done conflict resolution. How to specifically pitch and reduce conflict. Coaching, how to coach somebody and what's a realistic expectation. I've also done some management courses. It's about how to be proactive and to try and manage an issue before it becomes an issue. Part of that is persuasive presenting that I've done in industry as well. I've also used from my own wife – she's gone through an extensive management training program over a year and I've

read all her notes from a corporate perspective on values, coaching people developing people and managing people. I did this to inform myself as to how I can better manage teachers who are going through an enormous amount of change. At the core of it, the job is about change management and that's why the relationship aspects are important.

He too noted the importance of relationships with staff as a great leverage tool if he were to succeed in getting them to try incorporating ICT in their classroom practices.

The most important aspect for me is the relationship with the teachers…It is good that I am approachable and then my view is that translates to a trust value and as I said before that relationships are at the core of the job and then that is where you get a lot of leverage when that teacher is planning a pedagogical experience using technology and they are seeking a deeper level of assistance and coaching in how to implement something in their classroom.

8.2.4 Clarke – teachers need support from people who understand teachers.

The main talking point of Clarke's experiences, which can be seen to be related to his perceptions of ICT for Teaching and Learning, regarded the role of the Technology Assistants (techies). He had a number of bad experiences with technical staff that he retold, ranging from their inability to actually do what was required or determine specific needs through to their lack of empathy for

teachers and the resultant frustration that they felt towards staff who could not do simple tasks. He made several observations related to this tension.

My thinking is that to support them [teachers] you have to also be very good at communication and relationship. If not a rift naturally develops. Underpinning communication is empathy and it's 1- Rare to find IT specialists who are strongly empathic, 2- Hard to be empathic if you haven't spent time in the others shoes (Teaching) and 3- Struggle with the subtleties of the language.

He saw this issue as being exacerbated by having the Head of Technology as a person from Industry rather than from an education background:

At my old school I was working at I really struggled with the head of IT who was not a teacher. Here, Mark is a teacher and typically heads of IT are not empathetic. If they are not a teacher and don't understand them they will make decisions that are based on technology and not based on teachers or education.

This frustration led in part to him moving to his current school:

Teachers don't trust techs. That's one of the reasons I came to this school.

Clarke's view is that the teacher is of paramount importance and their opinions, needs and expectations are what the technical support staff need to concentrate on most. That being the case, there must be people in place to serve the teachers' needs primarily, and that is not the technical staff. In his view the technical

support staff do not understand teachers and as such there needs to be a go between (Head of Technology) who understands the teachers first and the systems second. His alternate approach is for all techies to have regular classroom experience:

In an ideal world I'd like to see all tech staff in a teaching role during some of the year.

This is an idea that is being implemented in another of the schools in the study.

Another major impediment that Clarke saw restricting him from being able to do his role in helping staff to incorporate ICT for Teaching and Learning was that of poorly performing systems undermining the trust or confidence that he had built up with staff.

I was talking to our Head of Senior School the other day and she said 'We just want things to work.' We want to be able to just walk into a room and know that they can all get it working and the network will be working.

In his opinion systems need to work consistently well in order for staff to build their own confidence in what they were meant to use and that would allow them to take the next step and start incorporating ICT in their classroom practices.

Because everything was really reliable, teachers had the confidence to go to the next step. If you try new things and if things don't work like Edumate, which is a nightmare, then staff lose confidence.

One of the main things that Clarke was working on was with the Project planning group who were trying to create a template that all staff could use. This template

would allow staff to develop learning opportunities for the students which, by design included reflections about how best to incorporate ICT into the learning. It also included many other ideas such as student well-being, authentic enquiry, deeper learning, community and global perspectives and so on. Clarke's reflections on working with this group gave perhaps one of the best insights into his view of ICT in teaching and Learning:

The good thing is as I'm sitting there IT takes a backseat. We try to frame it in terms of our roles so that it's easier to manage. Here's the IT questions and here's the research questions and here's the teaching and learning questions but as we're working through we've realized that IT supports the other areas. It's not something that stands alone.

Like the others, Clarke saw the need for empathy with staff and relied upon it to make connections with them that would allow him to do his job. His approach revolved around his ability to help staff without judgement.

Interactions have to be driven by compassion for the concerns of the teacher and a desire to support them as they try new things. One of the most gratifying compliments are when a teacher says "you never made me feel dumb"

Sharon comes from a school where changed pedagogy is the norm and where the expectation of staff to try new classroom practices is anticipated, in fact demanded. If staff do not follow the leadership's approach to innovative teaching, then they either cannot function within the school (due to the way that staff share class time) or they are asked to look for alternate employment that better fits

with their (usually) more traditional teaching practices. Sharon has been trained extensively in the use of ICT as a tool to help foster change in pedagogic practices. In fact, it is better to describe her training as the reverse – Sharon has been trained extensively in alternate pedagogic practices that rely to a high degree on the use of ICT to enhance their use and effect.

As such, many of the main issues that she sees in doing her role are in some ways more advanced issues than the other three participants. For example, she has been focused on what to do with student learning to ensure that the pupils do not repeat the same innovative, student centred, constructivist projects, and that staff do not 'steal' projects that have been developed for other years. This innovative approach has brought about another issue at the school – that being that the school is constantly looking for the next innovative approach that may improve student learning and teacher effectiveness. Often this leads to frustration as the school is often presented with innovations that they have either already incorporated into the general teaching of the school or have decided are not for them. That is not to say that the school is changing every time a new technology or pedagogic practice comes along, but rather the philosophy is that there is no such thing as best practice, so things can always be done better.

8.2.5 Sharon – carefully selecting support staff is crucial.

Sharon also mentioned network issues as being a major impediment to her being effective in her role.

I think basing everything on an underpinning of learning so the network runs and the network needs to be stable in order to maintain proper access

to learning. And making sure that all of those things fit together. Staff are in a position where they can access, with their abilities, the technology as well as just making sure that they can access the network … I think that mix of the network management I think is a real issue that's always going to be the problem because it's going to be the priority. The fact that the network works or doesn't work is always going to be prioritized. So there's always something in that, that is going to go wrong and that's going to take your time away from you.

She mentioned several times the systems that were put in place by the central authority, some of which were not needed by the school and some of which were implemented very poorly or just did not work as claimed:

The [central authority] had IP'd every school separately and they changed the way that our Wi-Fi was set up so that every school had the same system but the problem here is that all the IP's were conflicting. And then they duplicated all the student accounts when they roll them all in. I think mainly it was seen as a [central authority] issue but still it took five weeks of our time when we could've been in classes doing stuff.

Another issue that she discussed was the inability of some staff to share ideas and work in a cohesive fashion with other staff.

…basically she would come in and she would sit on her computer and do work and go to the kids here's your booklet for RE that's it. So I ended up teaching RE content as well as computing content. And she sat there on her computer. So we went through different stuff like having really tight lesson plans. 'While you do this I'll do that'. And in that case when you have that type of arrangement it becomes a very split classroom it was pretty much well you're going to be teaching religion content and I'm going to run a tutorial here on ICT. Rather than becoming that melded model.

She acknowledged that a large part of her role in getting staff to use ICT for teaching and learning was not at all to do with motivating staff, but more to do with the political and personal machinations within the school that hindered open and fruitful sharing of ideas and experiences.

One of the main differences between Sharon's view of the technical personnel and Clarke's approach to them stems back to Clarke's idea that technical support staff should be expected to spend part of the year in the classroom to understand what teaching is like. Over the course of the study, Sharon actively pursued this idea, employing technicians who were sympathetic to teachers and incorporating them into the learning process. This occurred through stationing the techies in the library as assistants rather than the library staff – who left the school over the same timeframe. When staff needed support that one would normally expect an integrator to do, Sharon's team of technicians did the job. As she saw it, there is no longer much need for tech staff as such when most of the technology is offsite anyway, so why not use them more effectively as classroom and Library assistants.

…and then obviously my team who this year are very good particularly on the IT side. I'd really like to get some more technology basics in the library staff particularly since their job is to drive learning rather than to manage the network. So I'd really like to see stuff that the IT department are supporting, the library staff are also supporting.

8.2.6 Summary of the perceptions.

To summarise, Sharon's perceptions of ICT come from her experiences working in a school that simply demands ICT use in class as a tool which helps drive the

much larger push for innovative pedagogy such as Flipped Classroom, Project Based Learning, Problem A Day learning, Combined Classrooms, STEM and ISTEM classes and so on. These classroom practices are mandated from the school executive which invests a lot of money training all the staff to be able to incorporate them into their pedagogies. As such the school relies heavily on ICT so the general view of the vast majority of the staff is that ICT is necessary for them to be able to do their job, thus as Sharon explains:

I think that my position I'm really lucky I think that in another school there would be a lot more push whereas mine can be 'Hey I know about this, you know this might help you.' So it is less pushy - it is more supportive. And I like that a lot I don't like pushy.

Clarke recognizes that ICT is of growing importance, and given his school's 2020 push towards an individualised learning model with ongoing assessment it is a necessity. His involvement in a group that is trying to make classroom projects come from a more educationally thoughtful perspective, as well as his involvement in the Year 7 teachers' preparation for an open learning area and how best to use that, have been leading drivers in his current push for ICT integration into Teaching and Learning. He also believes that he plays an important role in helping staff incorporate ICT by keeping staff/tech staff interactions to a minimum. He bases this on his experience of the technical support staff not understanding the pressure that teachers are under and not being able to correctly interpret teachers' needs from a technical perspective. He feels that technical staff can undermine the trust and confidence that he has built up in staff in a similar way to poorly developed systems.

Ned is passionate about ICT integration and has successfully implemented 1 to 1 device programs in two schools. He achieved this through determination and passion for what he believed to be an important educational tool that each student needed. He used his business acumen to create a strategic plan which he presented to the school board in each case. At both schools he easily convinced the board to invest in the devices. He values the importance of technology in Teaching and Learning and seriously attempts to put himself forward as a role model for other staff. His view is that the main hurdle in successfully integrating ICT to the level that many would have expected by now is more to do with the Education system itself. Teachers are already overworked and have many pressures and the time to do the Professional Development necessary to integrate these tools into pedagogy just is not there. His approach was to simply try to do the best he could with the broken model that he has witnessed with the belief that he could make a difference. He also acknowledged the problem of some teachers, particularly some in positions of responsibility being able to deliberately or even inadvertently undermine what he was trying to achieve due to their own views on the place of technology in education and their own very traditional classroom practices.

Steve relied on his quite considerable working knowledge of computer systems to help him leverage staff by ensuring that the systems that he put in place worked well and would be seen as valuable to the staff. He also saw staff as a valuable resource, carefully selecting 'champions' to evangelize the systems that he put in place. The other strategy that he relied upon was to make the technology a necessity for every teacher, every lesson. Making technology driven

administrative tasks mandatory like taking the roll ensured that the staff had the computers with them throughout the day. Steve saw this as a vital step in getting teachers comfortable with the devices – comfortable enough so that they would start experimenting with implementation of Teaching and Learning activities which relied upon the technology.

As can be determined from the above, eLearning Integrators' perceptions of ICT for teaching and learning are very much related to their storied identities. As their identities are made up of personal, place and temporal considerations so their perceptions are based around these same factors. The participants could not help but bring their previous experiences into the positions that they were fulfilling and those experiences helped shape the way that each participant went about achieving their role of helping staff incorporate ICT into the teaching and learning that went on in each school.

Similarly, it can be seen from the data that each of the participants is very much a product of the situation and position that they find themselves in. The cultures of the schools involved place varying importance onto certain aspects of the position that each participant is required to fulfil and able to achieve. The leadership of each school, as distinct from the school culture, similarly influences each of the participants to a high degree. The participants perceived support from leadership influences the decisions that they make and the amount of impetus that they feel they can provide in encouraging staff to incorporate ICT into their pedagogy, and indeed in altering their pedagogy to suit 21st Century learning needs. The overall process of change or transition is also an influencing

factor in the participants' perceptions of ICT. From using new administrative tools to encourage ICT use through to introducing 1 to 1 devices for the students, each participant has demonstrated an understanding of the challenges and benefits that change will bring to a teaching staff. All these factors combine to in some way influence the participants' storied identities and therefore their perceptions of ICT for learning and teaching.

8.3 Question 2
How are eLearning Integrators' storied identities related to the TPACK framework?

When collecting the data for this study, details related to this question proved to be the most scant. Each of the participants was asked about TPACK and whether they considered it when undertaking their role. Their responses were all much the same – they had all heard about TPACK through reading or their Professional Learning Network but none of them had given it any real thought beyond it being a model just like SAMR which helped to determine where teachers were at in their move towards incorporating ICT into their classroom practices. Of course, this is not really what the TPACK model is designed for. It is a framework to help understand and describe the different kinds of knowledge that a teacher needs to effectively incorporate technology into pedagogy. In relation to this study, the participants response to the question does highlight the point that eLearning Integrators are not really driven by, and one can assume not terribly interested in, any particular all-encompassing model for how to effectively do their job.

This is not to say that the TPACK model is irrelevant to eLearning Integrators because they naturally push some of the components of the model all the time. They just do not stop to think that is what they are doing which is to be expected as people in general rarely analyse all their actions throughout the day, particularly with things they are comfortable with. The model is, however, of value to me as a researcher studying the storied identities of the participants and determining how those identities affect their role. It needs to be recognised that TPACK is a complex framework, and it is also an evolving work in progress. As such, the suggestions that I will make to suggest continuance of the frameworks evolution, especially addressed in the next chapter, are not designed to overly complicate an already complex tool. Rather I am merely reporting findings that point to other considerations that could be taken into account as TPACK continues to be revised.

8.3.1 Staff view on technology – it can be intimidating.

Three of the participants agreed that, to some degree, technology frightens the majority of staff. As Steve explained it:

> In order to advocate this technology, you need to have a robust system in place. It doesn't matter what sort of level of work you do and what sort of fandangle ideas you have unless you've got the technology to support it forget about it. So that's what we've been doing – putting the systems in place that are reliable. It's got to be an absolute no-brainer. And the teachers are just scared. They're intimidated by the technology.

According to Steve, whilst there are early adopters and staff who are quite interested in using technology, the majority of staff would prefer to not use technology, at least initially. Steve highlighted this by describing why the DER failed:

It just was thrown upon them and there were no resources or tools or foresight in trying to manage that.

Ned recounted situations where staff members were in tears over the use of technology.

I think that is because in an open plan environment people do vent their frustrations but they are much more reluctant to expose their deeper anxieties in case someone else is there which is a big positive for me because one of the things that does burn you out is being drawn into their emotional issues and it happens regularly. I have had staff members crying because of technology.

Clarke said that a big part of his role is to reassure staff that they do not need to be experts to be able to use technology effectively.

So making sure they are not over awed by the expectations – like with BYOT for example, you know you don't have to be the expert. You can shift the responsibility back to the parents and work with student experts.

8.3.2 Staff view on technology – school culture has a major impact.

Sharon's situation is different to the others in that she is at a school where there is a demand by the Senior Executive that technology is expected to be used in all

subject areas and consistently. As such the vast majority of staff are very comfortable with the technology – not all staff, however, as she pointed out with one of the Physical Education staff:

…but there are exceptions to the rules for example I would never expect Dan to learn anything like that. It's better use of my time to say I'll go into all 8 of your classes over the next two weeks and be there to support the kids.

When considering how the participants' narratives are related to the TPACK framework, one needs to look at what the eLearning Integrators are trying to achieve in their positions. Sharon is very focused on the Technological Pedagogical Knowledge that she delivers to the staff:

I think that we are doing different things not because we try to do different things and not intentionally just because of project-based learning. Project-based learning has changed the way that we use technology; it's not technology that's changed the way that we teach.

Particularly with the Project Based Learning pedagogy (7 – 10) she focuses on the projects that staff are running and suggests, demonstrates and runs PD sessions on apps that can be used to allow the project to be delivered by the staff. At present she is trying to get the STEM program in place, determining what projects to run and what computer applications can be used to support her in delivering the course. As it is a new course at the school she is also working on the actual content to be delivered and so is focusing on the Content and Technological Content Knowledge as well. She recognized her own limitations in this area:

I think one of the weak points is when I have scoped for this year, as far as chemistry and biology goes there is not a lot of that in next year. My bias is obviously towards TAS so that encompasses some of the physics stuff and the maths stuff as well. But then there is a weakness in bio and chem, but, maybe next year we will look at that.

At the same time, she is supporting a couple of other teachers who are running ISTEM [Integrated Skills, Technology, Engineering and Mechanics] projects with students again helping with the Technological Pedagogical Knowledge.

So we went out while I was on long service leave last year - with Sam and Gary. There is a Year Nine board endorsed course called ISTEM. Basically it is a syllabus from the Hunter region. They got it board endorsed. But it is - the purpose of the syllabus is to increase manufacturing in that area. Teaching industrial skills in a problem based learning environment. Their first project was to do the hydraulic needles that they made to lift systems - they have built drones and done some robotics stuff. Anyway they have been doing some awesome stuff. So we have bought a laser cutter and the mill and stuff. The Mill is making stuff so we can figure out how to use it.

Sharon's role requires her to be able to respond quickly to perceived current needs. Often her principal who really pushes pedagogical thinking within the school and sees technology as a vital aspect of achieving pedagogical change expresses these needs.

8.3.3 eLI's view on pedagogy and content– they can be important motivators.

Similarly, Ned sees his role as inextricably linked to pedagogy:

…because my role is dependent on the overall curriculum agenda of the school and we have to be seamless on that front. We both have to be pitching the same key messages and not disparate in any way shape or form because technology in the end is just the tool but the more important part is the pedagogy. If it is going to result in improved student outcomes then we have to be aligned 100%. Even if we have a disagreement we have to find middle ground and make sure that we are on the same page.

A lot of the frustration that he discussed about the role he had at his school can be traced to outdated pedagogical practices and disinterest. This took two main forms – staff who were uninterested/unwilling to try pedagogic practices that did not include expository teaching and staff not seeing the value in the technology that students were bringing to the classroom, as it was a 1 to 1 device school. Of course, these forms are a by-product of each other. If staff are most comfortable with 'talk and chalk' then there is no real need for technology as their current practice does not require it. Ned's focus was to motivate and lead staff to try other pedagogical practices that would make better use of the technology, such as a flipped classroom approach, or mini-projects such as the podcast one he developed in History. Getting this Technological Pedagogical Knowledge across to a disinterested staff proved a real issue, particularly given that the Senior Executive, whilst interested in pedagogic change, also supported staff who wanted to use traditional teaching methods. The implication of this for the TPACK framework and the participant's storied identity is that it highlights the importance of the context in which the framework is applied. I believe it also

leads to a need for there to be a more explicit description of the types of influences that compose the contexts within the framework diagram.

Clarke was part of two groups in his school that focused very much on several parts of the TPACK model. His Teaching and Learning Team were focused on the content of projects – not just technological content, but also a number of other areas, for example, global awareness, well-being, inclusivity and so on. Their key goal was to create a framework of sorts that would include Technological Content Knowledge as part of the overall structure of all projects developed in the Secondary section of the College. The other group he was working with were the Year 7 Teachers who were planning how to change their pedagogy to suit an open learning space, which they were expected to work in over the coming year (2016). A big part of his role was to discuss with staff the Technological Pedagogical Knowledge that they would need in order to function in such a space. His key message was that they did not need to be experts.

We just raise with them what the challenges will be, trying to help them be comfortable, you know they don't have to be the expert.

Clarke also was working on systems that would provide a means by which the College could realise its 2020 vision of individualised learning with continuous reporting. Whilst this push by the College saw a lot of stress and even departures, it was deemed as a main goal of the College Executive as they try to move the Teaching and Learning environment forward. It reflects the high expectations of the parent body to provide an education that can justify the price tag.

This whole push is reliant on Pedagogical Change that can only be brought about with the clever use of Technology, so again Technological Pedagogical Knowledge is an important aspect of the knowledge that Clarke is trying to disseminate to the staff. It also requires a degree of change to administrative procedures. An example of this is how reporting is viewed and delivered to parents which whilst not explicit within the TPACK model perhaps highlights the case that the TPACK model may need to be expanded to include Technological Administrative Knowledge. Perhaps the A could stand for Administrative rather than And.

8.3.4 Place is important.

Steve had the least to say about Pedagogy:

So you've got the pedagogical side and the administrative side. And I spend a lot more on the administrative side than the pedagogy.

This is more than likely a function of his position, working between three campuses and spending most of his time troubleshooting administrative type ICT issues rather than pedagogical ones. This also strengthens the argument for why Administrative Knowledge should be included in TPACK. However, through his storied identity some aspects of the TPACK framework are highlighted. When discussing the Chromebooks and the amount of time that he has spent preparing for the influx from the primary feeder schools of these devices, Steve did talk

about how much time went into making the devices school friendly – ensuring that the content they delivered was appropriate.

So why the Chromebooks ...well I don't want kid sitting on a device in the classroom playing games. It needs to be educational. Once again a parent goes to me why do I want to buy a Chromebook. And the answer is that when they sign into our domain they can only get on the apps that we want them to. They only get to see what I allow them to see.

Broadly speaking this would fit within the Technological Content Knowledge section of the TPACK framework, determining not just how the content can be delivered to the students but also what content is deemed appropriate and what sources for content should be accessible to the students. Of course there are also pedagogical (TPK) considerations that would be taken into account when making such decisions. It is often difficult to describe a decision as only being based on only one part of the TPACK model.

This interpretation of Technological Content Knowledge (to include knowledge of appropriate sources for content) was also highlighted by Clarke when discussing his interest in a Digital passport for the students – allowing them access to content from more and more sources as the students developed as digital citizens. Clarke saw it as an important recognition of the students as developing skills along the way which would lead to them becoming more responsible with the 'rights' that they gained by demonstrating good digital citizenship.

Whilst the TPACK framework as a model is not in any of the participants' day to day considerations, what it identifies as important knowledge in incorporating ICT into classroom practices is certainly what each participant deals with on a daily basis. In particular, the Technological Pedagogical Knowledge and/or the Technological Content Knowledge are a focus for the participants. Similar to how the perceptions that each of them has is linked to their storied identity, the particular focus on part of the TPACK model is a result of the circumstances that the participant finds themselves in. The commonplaces of personal, place and temporality combine to create each participant's storied identity as well as influence to some degree the particular focus that each of them has in performing their job. The next question will look at how the participants react to this influence in carrying out their duties.

8.4 Question 3
How, if at all, do eLearning Integrators' Storied Identities influence their support of teacher adoption of ICT for Learning and Teaching?

It has been argued that Storied Identities of eLearning Integrators are related closely to their perceptions of ICT in Teaching and Learning as well as to the TPACK framework in influencing what sections of the framework they concentrate on most. Mishra and Koehler saw it more as a tool for researchers than as a tool used by teachers. Teachers, including eLI's may not be aware of the framework nor mention it explicitly, but it is implicit and discoverable by analysis in what teachers say and in the case of the eLI's what actions they take. This section concentrates on the actions that each of the participants takes in

order to support teachers in their adoption of ICT in the classroom. The emphasis will be to analyse the influence that each participants' narrative has on their actions. As there was a large amount of data collected that relates directly to this question, a summary displaying just a few examples of actions taken will be provided. A fuller and more detailed description of the actions of each participant can be found in Chapter 7 *Meet the Characters.*

8.4.1 Role modelling can be effective.

Based on what Ned learnt in the corporate field of Chartered Accountancy, he often used a hook to get staff interested in the content that he was trying to deliver. I observed him working in tandem with the Assistant Principal (Teaching and Learning) in order to present a new administrative tool to the staff over the course of a day at the end of 4th Term. They worked in a tag team approach, each presenting for short bursts, the information from their particular perspective. Ned mixed it up with motivational videos from a corporate world view which had relevance to, or added emphasis to, what he was saying. Basically he was on the stage and he oozed enthusiasm for the system that he was introducing. This Professional Development for the staff typified Ned's approach that was based on his beliefs about how to present and how to work with groups of people.

In my work in industry I was heavily trained in the productive applications so I went through extensive office training, extensive communications training, presentations, persuasive presentations and then also being groomed in that environment about how to be professional in the real world.

His fortnightly PD sessions were in his opinion the best of a bad group of choices to help staff with incorporation of ICT into their pedagogy.

That is what the Leadership Team want to see. My assessment at the moment is that given that time is available, given what I'm capable of doing, it's probably the best out of all the other options. It's not ideal but it's the best that I can hope for weighing up everything.

These sessions were timetabled in for each staff member to attend at a particular time with around seven other staff from various faculties. Ned used this time to demonstrate and coach staff in using various pieces of software – some pedagogically based and others administrative in nature. I observed several sessions on a package called Literatu which Ned and the Assistant Principal (Teaching and Learning) saw as an alternative to Moodle and a quicker more effective way for the teaching staff to look at the analytics of tests they were giving to students. However, despite devoting a number of sessions to this product, the uptake by staff was regarded as mediocre. The Science Department began using it a lot, but the Mathematics Department gave up on it. Ned gave examples of a few individual teachers who seemed to run with it.

This serves as a good example of how Ned's storied identity influences his support of teacher adoption of ICT. He believed he should act as a role model and went to great lengths to show staff how he used Literatu in his classroom to remove the drudgery of most of his marking and provide him with valuable data

that he then used to plan future lessons. He was acutely aware that part of his role was to help lead pedagogic change within the school, and he found software that he believed would really help staff, as well as provide some solutions to what staff were facing with the upcoming teacher accreditation.

I think most staff were still in a bit of denial about the fact that pre 2004 teachers have to insert into that system.

Despite a fair amount of teacher pushback, Ned continued pushing the use of this product together with cloud repositories as a means to allow staff to record their practices for accreditation purposes.

This year I want staff to have a realistic alternative to the current Learning Management System. Which is to add the Literatu system. And then an idea that instead of hosting documents in Moodle they can put them in the cloud. That would be my best hope. Getting the staff to that position. So having gone through and seen the alternative, and having worked in that space, getting staff to feel comfortable in that space - learning the elementary skills, and challenging those staff members that need to go and take the first step to move into that space.

Another major way that Ned supported staff in ICT adoption in Teaching and Learning was to push for and achieve a 1 to 1 environment where every student came to school with a tablet device. Over the course of this study, I saw this Personal Learning Device (PLD) program move from a trial with just a few year levels, to a device for all students within the Secondary section of the school. This

was a real success in that students really liked having the devices and the devices chosen were quite good – a Lenovo device for the junior years and a Surface Pro 3 for the senior school. There was a lot of consultation – a committee was formed to discuss the devices and the expectations surrounding their use, so staff did get to have input into the program. His belief in ICT for teaching and learning drove his desire to lead the school down the 1 to 1 device path. Whilst having this program in place was quite an achievement, Ned became very frustrated with the lack of usage of the devices as tools for pedagogic change among a large number of the teaching staff. The example that Ned's inclusion in this study has provided has highlighted the fact that despite having good systems in place and technology for every student and teacher, if Senior Executive members do not help drive pedagogic change by expecting it with the staff, then it will not occur with many staff members. Resources alone do not drive changes in classroom practices.

8.4.2 Redefining roles can have a positive impact.

Sharon's narrative expresses on a number of occasions the need for Library staff to reposition themselves to playing a key role in helping teachers adopt ICT for learning and teaching.

The other problem I have is the Library staff because they're not entirely functional - in general. I think that the whole world is trying to find a place for Library staff. The problem is that they are not teacher librarians they are just support staff. Boys don't read anymore unfortunately and probably all library staff need to be more digitally literate. They need to get with the times a little bit more digital. But then the staff that we have are not very technically proficient. A lot of libraries around Australia

are trying to get librarians with eLearning knowledge and at our school it's not really working.

She actioned this by taking over the Library, removing the library staff completely and operating it with her tech support personnel. She created a maker space within the library for teachers to be able to bring their classes to create physical products. She chose tech staff who could concentrate on certain aspects of what teachers were trying to do in the classroom:

…Stanford University - what they're trying to do is put more Fab labs around the world and then gather data from them to figure out what the learning outcomes are. Okay it's all the constructivist stuff you know. So that is a big thing but there's also … like that's Jim's thing. And then Ted's doing lots of filming stuff and going to classes and filming and supporting that. And then Julie is doing iPad stuff. So it's great that they're not just network managers. They are also supporting staff in classes. So that's the push at the moment.

Her belief that libraries could be so much more than just about books and her vision to use technical support more effectively were both actions that result from her storied identity as an eLearning Integrator in a school where pedagogic change and the use of technology were demanded by the school's Executive.

Her involvement in the Critical Friends process within the school also allowed her to support teacher adoption of ICT for learning and teaching. This process required that each project developed by a department undergo a process of peer review by other teachers from different departments. It was a way for Sharon to see the sorts of projects that staff were developing and provide suggestions as to

what sorts of apps or software could support the project. Critical Friends was a technique that the school picked up during training that a number of staff undertook for Project Based Learning in the United States. This pedagogy figures prominently in Sharon's storied identity and demonstrates the influence that her identity has on how she goes about supporting staff.

8.4.3 Empathy and school vision – strong drivers of change.

As already described, Clarke is involved in a number of programs designed to help support staff in adopting ICT for learning and teaching. His narrative indicates that his approach to supporting staff comes from the perspective of empathy and building relationships.

You need to have real empathy for this role. You need to have an empathy for what teachers are struggling with. Sometimes I think some teachers are lazy but on the whole I think they are just surviving and if they get some time to do something else then they will.

His way of measuring his success is through determining teacher happiness related to the things that he does:

…nowadays I measure my success by teacher trust, teacher happiness and teacher inspiration. You'll notice my focus is securely on them. They then focus on their students.

He listed a number of things that he does at the College to support staff in adopting ICT:

Team teaching, answering emails, researching solutions to problems, setting up resources, creating training material, always in meetings to plan changes / ideas, administration of systems such as the intranet, virtual classrooms, notices, surveys. Helping students that come to the hub. Researching new tools / ideas. Learning new systems.

His identity has been shaped by some of the specific needs of the school in realising its 2020 vision for individualised learning. He plays a crucial role in helping Year 7 teachers prepare for a pedagogic change to open classrooms. There is also his involvement in the 2020 curriculum planning group where he can help create a framework that teachers will be able to use to develop authentic activities for students which includes ICT as a tool to enable the activity to function. The moves requiring a change in pedagogy for teachers have certainly influenced Clarke's support of the staff and the sorts of ICT that he helps staff to work with. Another aspect of his storied identity also shows its influence here.

As far as new systems go we are looking at Schoolbox which is an Australian LMS CMS tool. They allow voice recording for feedback. And Rubric marking. We ran a trial the other day with Turn It In and Rubrix and similar things and my favourite - voice recordings.

I like that idea in the context of continuous assessments because it gets away from the teachers having to worry and worry and worry about spelling mistakes and where the comma goes and it's a very effective way to get feedback. In a way it's more personal. So we are working

towards that and we are working towards online because a lot of teachers still like the paper to write comments – they could just put verbal feedback in and it would be much quicker. There are so many people like us who just don't have a lot of time

8.4.4 Building self reliance in staff.

Steve's approach is to put systems in place that the teachers can then become expert in using. In order to achieve this, he firmly believes that the systems need to be functional, reliable and of real benefit to the staff:

I guess the most important bit in getting traction having programs in place, a stable infrastructure, the teachers to leverage off to be able to use and utilize the ICT skills and technology in the classroom...If you don't have a robust network to support your infrastructure, then you're screwed to start with.

If those conditions are there, he is of the opinion that teachers will then start using them. There is no point putting systems in place that the staff will struggle with, or that prove unreliable. There is also no point in him putting in systems that will just require him to be around to administer them. Steve is not interested in building a castle for himself. He wants self-reliant staff.

You try and put people in a position where they can be autonomous... If you give power and train people to do things then that's less time, less frustration, less anger. Look, it is about building capacity in people. You

essentially want them – it's not just change management – you want to increase that capacity so they can be Semi-autonomous. Or autonomous in that environment.

To achieve this, he relies upon faculty champions to take on the role of incorporating the technology into their classroom practices and then telling other staff about it.

So that way I start to get Shane the faculty champion on this app to go deliver the professional learning so that everything doesn't have to come through me. I don't need to be that driving force. I need to facilitate the process but I want the teachers to take ownership. Fundamentally that's the toughest part of this job. To get teachers on board to drive it.

Steve's storied identity is all about him putting in systems for the staff and then moving on.

As I said before I build the system but I want people to manage it. I don't have time to run around. I don't want them to look at me as the administrator look at me I'm amazing. I want them to utilize it, for it to develop under their prowess because they're the ones using it. I just want to encourage them to embrace it.

Coming from an industry where there was a heavy reliance on ICT and an expectation that it was being used by the staff, Steve has brought this expectation with him to the education sector. His approach of finding a way to necessitate staff taking a laptop with them to every class and then making sure that there

were systems and other technology in place that worked and offered teachers opportunities to experiment with the technology stems directly from his personal narrative.

8.4.5 Summary of storied identities influencing support.

Whether it is helping staff to implement pedagogic change, changing the way that spaces like a Library are perceived and used or trying to get staff to look at test marks and results in more interesting and effective ways, the narratives that each of the participants provided certainly correlated with the support that they offered to staff. Whilst the approaches and focus of each of the participants varied depending on what their school was trying to achieve, the shared opinion of each of the participants was that in order to support teacher adoption of ICT into pedagogy, the relationship between the eLearning Integrator and individual staff members was of paramount importance.

Table 8.1 summarises the approaches and focus of each of the participants and it helps to clearly demonstrate the correlation between the narratives of the participants and the type of support that they offer to the teaching staff.

As can be seen by these examples and table 8.1 that summarises the findings for the reader, the storied identities of the participants certainly influence their support of teacher adoption of ICT for learning and teaching. The knowledge gained by answering this question as well as the two previous questions will be used to answer the final question which will be addressed in the next section. It

will provide a sort of a roadmap for eLearning Integrators to use their storied identities to help guide them in how best to support teacher adoption of ICT in their classroom practices.

Table 8.1
Summary of how storied identities influence support of teacher adoption of ICT

Key aspects/beliefs of the participant	Effect beliefs have on support of teacher adoption of ICT
Ned	
Comes from a Corporate culture.	Did as expected from leadership team even though it was not his preferred model of Professional Development. Expected the senior leadership team to support his efforts and for them to expect staff to embrace the changes he was trying to make in the school culture.
Communication training from the corporate world.	Relied on hooks and motivational videos to spark staff interest.
Looked to future needs.	Sourced software that would help staff with future accreditation needs and modelled its use.
Saw himself as a role model.	Enthusiastically embraced software and procedures that he was expecting other staff to use.
Believed in consultative approach to decision making	Formed a committee to determine 1 to 1 device choices and roll out.
Sharon	
Library staff role needs to change as does the Technical Staff responsibilities	Took over the library and replaced the staff with technicians specializing in what teachers trying to do with technology.
Supported the critical friends process	Used critical friends process as a way to gain knowledge of what staff were trying to achieve and a forum where she could help teachers with app selection and determine further training requirements.
Clarke	
Need to build relationships with staff.	Took an empathetic view about staff struggling with IT. If he could help them, they could concentrate on the students.
Measures success by teacher happiness.	Worked closely with teachers via team teaching, setting up systems for staff, researching solutions to their problems and so on.
In a school where major pedagogical change was starting to occur.	Put in systems and found apps to help with the individualized learning approach, worked closely with Year 7 teachers on eLearning tools to help with pedagogic change.
Steve	
Comes from a business environment where systems just have to work.	Concentrates on putting systems in place, perfecting them and then getting staff involved in their use, and helping them to become proficient or even expert.

Not interested in building his own castle where he is always needed. Belief in faculty champions.	Has a philosophy of building capacity in staff through workshops, tutorials and using other staff too.
Staff should be using the technology	Has other staff deliver PD on software or apps they are familiar with. Put systems in place that necessitate staff to use the devices in their classrooms.

8.5 Question 4
How can knowledge of eLearning Integrators' storied identities be used to guide them in supporting teacher adoption of ICT for learning and teaching?

This study has looked at four participants who are all (or were all) eLearning Coordinators/Integrators, charged with the task of leading teaching staff to increase their use of ICT in their classroom practices. Each participant has been introduced to the reader using the constructs of the narrative commonplaces of temporality, personal and social, and place. This has provided an insight into each participant which has proven useful in answering the question of how the participant's storied identity relates to their perceptions of ICT. It has also provided an answer to how storied identities influence an eLI's support of ICT integration with staff. Finally, analysis of the narratives has helped to establish how storied identities relate to the TPACK framework in helping determine the types of ICT knowledge that need to be shared with the teachers.

The question now is what can eLI's do with the knowledge they have about their and others' storied identities? Can it provide a way forward to make them more effective as leaders of change? An obvious place to start is to think about the stories themselves. What commonalities can be taken from the four participants that may lead to an insight into the role of eLearning Integrator and the

negotiation of the various day-to-day and long-term activities that people in such a job have to carry out.

8.5.1 The personal and social commonplace.

Starting with the commonplace of the personal/social sphere, it is quite apparent that eLearning Integrators need to be 'people persons'. They need to be approachable, affable and empathetic to the needs and feelings of teachers who are faced with the changing Education model. There is no doubt that the 'Sage on the Stage' approach to delivery of content and curriculum is not compatible with student-centred, constructivist or constructionist approaches to teaching and learning, nor individualised learning, differentiation within the classroom, inquiry learning or cultures of thinking. Added to this is the pressure that teachers feel when faced with technologies that they may not be at all comfortable with – in many cases certainly not as comfortable as the students who they teach. So a helping hand in the form of support from a knowledgeable, friendly peer who is not about to judge or ridicule is vitally important. This holds true for teachers of all ages, not just the non-'digital natives'. Sharon illustrated this point in the following anecdote.

…and Dennis the other Multi teacher I assume he can use illustrator but you just don't know. You can't assume that they know everything about computers. There's stuff I don't even know that is to do with my job for example the other day someone rang and said the switch is down in the building. And I said that's a problem right?

In order to be approachable and empathetic, the eLearning Integrator also needs to be easily accessible. The least accessible was Steve. Teachers' comments about him being the Yeti or Seagull stems from the fact that, split over three campuses, he can be a very hard person to find. There are a myriad of ways that communication with eLearning Integrators can take place but real life coaching is usually the preferred way of showing staff how to do something. It is also necessary when staff are trying to explain a problem they are having, but do not know the terminology of the issue they are experiencing. In Steve's case, he creates a number of short video tutorials on how to do simple tasks with the systems that he has put in place and makes them accessible to staff so that if he cannot be found then there may be a tutorial showing exactly what the teacher wants to know. His work area at both the senior campus and junior campus were in areas near the library – in an attic space above the senior library and a library staff workroom in the junior campus. In both instances, these were fairly central locations. He had no dedicated work area at the behavioural campus. As he shared the in-house tech support role with Nancy, they shared the loft office space.

8.5.2 The place commonplace.

This issue of having multiple workspaces is not going to be common among most eLearning Integrators who would be on just one site. However, it does lead to the question of where people in this role should be located. Sharon took over the library that was a central hub in her school, and close to lots of the technology that she was helping staff to incorporate into their practices. She had the technical staff with her so any technical issues that arose could be discussed or

acted upon immediately. Clarke also was housed with the technical staff, although he did have a separate office to them that he shared with Lois, the other Integrator at the College. He also had a good working space to use with small groups of teachers. His location was fairly central within the school, although not as highly visible as Sharon's location. Ned was also highly visible, having a desk in with the majority of the teaching staff. As he commented, this had its downsides, one being that in order for him to be able to do preparation work for his own lessons he would often have to hide himself away. Ned was quite a distance from the tech support people in comparison to the other participants but this did not appear to be of great concern to him.

Another issue related to the commonplace of place is the school culture which influences the storied identities of the participants and which guides eLearning Integrators in supporting teacher adoption of ICT. In particular, the role of the senior executive of the school in leading change is crucial. If eLI's are in an environment where pedagogic change is not mandated or encouraged, then fuller student engagement and deeper learning with the use of ICT's is not going to happen. There will be some degree of Substitution and Augmentation, which no doubt has benefits like lighter backpacks thanks to digitised texts and faster calculations, but Modification and Redefinition of tasks will likely not take place except for in classrooms where the teachers are looking to change their pedagogic practices without outside encouragement. Primarily, eLI's would not be at the school to serve those types of teachers anyway.

This claim is best supported by comparing the perceived successes of Sharon, Ned and Clarke. Sharon's Senior Executive mandates pedagogic change and the school uses ICT as tools to achieve this. Student use of PLD's and Laptops is very high in the projects carried out which allow for authentic tasks and construction of deliverables which demonstrate to some degree the learning achieved. Clarke's Senior Executive has a five-year plan that the school body has adopted which has mandated pedagogic change to achieve individualised learning as well as teacher collaboration on projects due to the open plan spaces that are being built. At both of these schools there has been a large turnover of teachers who were unwilling to embrace the changes required. The remaining staff have used the ICT as tools of Modification and Redefinition, with the highlighted point being that it must be the pedagogy driving the change, not the devices.

8.5.3 The temporal commonplace.

Ned's Senior Executive allows teachers to decide for themselves whether they want to teach in more familiar or comfortable ways and ignore the technology or use it to substitute current teaching practices, following the Substitution level of the SAMR model. . At his school, the Executive placed trust in the teachers' own beliefs. As all four participants have indicated, change is something that most teachers try to avoid, so little wonder that Ned said that he had a very hard time convincing staff to use the technology to alter classroom practices and provide students with a richer, deeper understanding. Where he did have success was in an administrative tool which the staff needed to take the roll, organise day away lessons, and set homework. Because the tool allowed for some pedagogic change, namely staff being able to plan lessons for the students to be able to see and add

relevant links, quite a large number of staff have adopted this technology. The fact that it allows staff to quickly provide evidence required for the Australian Institute for Teaching and School Leadership (AITSL) also helped drive adoption. As Ned pointed out:

> Fundamentally it [Literatu] makes the brief of what you are being asked to do with all of the AITSL Standards and modern pedagogy and data analysis. So it is completely on the money in terms of research.

When teachers can see a personal benefit from using the technology, or when it is mandated, then the eLI's task is much easier to achieve. Due to there being a push at this time for teachers to become accredited, this provided Ned with the impetus he needed to encourage staff.

When thinking about the guiding knowledge that eLI's storied identities can provide in terms of temporality, Steve's situation immediately comes to mind. Due to the current expectation for students to have PLD's and be encouraged to use them as another learning tool, his school faces the real dilemma of hundreds of students turning up to the school in Year 7, having been using PLD's in class already and expecting to be able to continue this practice. This situation certainly directed Steve's thinking and dictated to a large degree where he focused his energies for a lot of the time:

> So I just got to push it out there but I've got to do some last minute testing on some of those apps. That's what I've been doing over the year – trying to work out what the kids can and can't do. I need to know that before I get out

there and go 'I'm awesome let me show you how awesome I am.' And then they go that doesn't work and then you look like an idiot.

In the process of catering for the devices, this situation has led Steve to invest a large amount of time in Google Classroom as a way for teachers to begin to cater for the fact that the students will be bringing the devices and expecting to use them. As is his approach, he has put the necessary systems in place and is presently in the process of ongoing training with the staff on using Google Classroom effectively. Again this knowledge can be viewed in terms of a link between pedagogy and the ICT being used. However, in this case it is fair to say it was the ICT that drove the change in pedagogic practice.

One of the main issues that each of the participants highlighted was the lack of time available for Professional Development on ICT integration. Ned described the issue well when he said:

If you have a staff that has got 39 periods a cycle plus their marking, plus their duties, plus their normal administration, there is no more time left for PD time. Something has to change. Either we pull back on what teachers have to do which isn't happening because we are adding more, or we have to change our model and that's going to be not very palatable because the payoff in the industry is to have holiday time as the pay back for the additional time over the eight hours that teachers generally work every day.

Looking at how each participant is dealing with this issue may provide guidance to eLI's who may be faced with similar situations. Steve formally provided PD to staff about four times per term. He tried to make the most of these opportunities by asking staff via a survey what PD they most wanted. He also provided an enormous amount of guidance to staff whilst on the go (whenever staff could catch him). He also relied a lot on the assistance of Nancy to help in disseminating the ICT knowledge that the staff needed. He lamented that he did not get as much time as he would have liked to go in to classrooms to work with staff.

Clarke had only rare opportunities to work with staff in large numbers. He did spend a lot of time going in to classrooms to work with teachers. He also relied heavily on Lois to help him in his role, and although they had separate focuses, Lois being focused on the Junior school and Clarke concentrating on the Secondary, they shared many common goals and collaborated to achieve them. A main approach he took in order to achieve his goals was to be an active participant in two committees. One focused on preparing the Year 7 teachers for a change to their teaching practices of which ICT was a major aspect and so he could encourage staff through those meetings. The Curriculum Planning committee was all about making projects achieve more outcomes that were perceived as valuable.

Again ICT use was seen as integral to being able to achieve the outcomes and so again Clarke, through the committee, has been able to ensure that ICT use is incorporated into the projects that staff are undertaking. The model that the group was working on was designed to serve as a template for all staff. This has

meant that ICT integration is something that all teachers will necessarily have to plan for when designing learning activities using the model. Clarke puts his time into the committees and the models and ICT integration flows from that.

Sharon regularly worked with large staff groups in her role as an eLI. The school had weekly after school Professional Development meetings where she would often demonstrate various technologies or software. In addition, through the Critical Friends process she was able to provide smaller groups of staff with ideas on how to effectively use the technology which was in the classrooms. As well as this, she was able to run small department based sessions where a particular technology could be demonstrated on a regular basis. Due to time constraints, actually going into classrooms to help staff became almost impossible for her.

What happened is that about half way through the year one of our teachers left and I ended up picking up two classes, so I pretty much haven't been in a classroom for the last 6 months.

She overcame this by surrounding herself with a technical staff who were comfortable with going into classrooms and working with the teachers. Each of the technical staff had their own specialties and when teachers asked for help, as the technical staff had no timetables, there was always help available. Whilst this help was mainly technical rather than pedagogical, it did allow teachers to be able to try out new classroom practices with the main fear of technological failure being eased.

Ned had a few opportunities to work with large staff numbers – usually at the end of the year during professional Development days. There was never any

opportunity for him to run after school sessions during staff meetings as there were only five staff meetings throughout the whole year and they primarily focused on other issues. There were timetabled sessions for every teacher once per fortnight to work in small groups with Ned. According to Ned this was less than ideal but he did take the opportunity presented to introduce staff to technologies which could help them to change their classroom practices. There were mixed views on these sessions by the teachers with a number wanting to opt out regularly. They did not see the value in such sessions, and the majority of the Senior Executive never attended, with no reasons given.

Ned did get to meet with staff on a one to one basis regularly; however, this was mostly for technical help rather than pedagogic practice ideas. Of the four participants, Ned was the only one who really had no one to help in the role. There were technical staff but they were solely there to work with the technology. He did form a Technology Committee which met occasionally to discuss issues which were sometimes technical and sometimes pedagogic in nature, but during the time of the study that group only met about four or five times and it was usually to discuss what PLD's to purchase and what to do about the Moodle site. He had the least number of avenues of the four, in which to get across his ICT integration message.

8.5.4 Summary of knowledge as a guide.

Table 8.2 provides guidelines that eLI's can use to help in supporting teacher adoption of ICT for learning and teaching. It is based on what the participants said in this section as well as in Chapter 7. It serves as a summary of what the

four participants together determined to be the most important aspects of achieving success in the role of an eLI.

Table 8.2
Guidelines for supporting teacher adoption of ICT for teaching and learning

Guidelines for supporting teacher adoption of ICT for teaching and learning
There is a need to be a people person and empathetic to staff and always take their queries seriously, without making fun of them.
There is a need to be considerate of all teachers, without assuming that younger teachers are more tech savvy.
There is a need to be readily accessible, preferably in person but if not then at least there needs to be some way that eLI's are quickly contactable.
Technical staff need to be close at hand to discuss issues with the eLI.
eLI's need to get senior executive on board if they are going to have any chance of successfully effecting change to pedagogical practices and associated ICT integration.
What is going on in surrounding schools with regard to ICT use by the students may impact greatly on your school – especially feeder schools.
There is a general lack of time available to staff to participate in quality PD related to ICT use. There are a number of things that eLI's can do to alleviate this to some degree including making sure they are on committees, participating in *critical friends* type meetings, working with staff in their classrooms and using other experts including technical staff, faculty champions and digitally competent library staff to deliver PD at opportune times.
Administrative tasks are a good way to get teachers to start using computers for education purposes and taking them to class.

8.6 Chapter Summary

In this chapter I have analysed the storied identities of the participants in order to address the four questions that the study attempted to answer. It can be seen that eLI's storied identities are an important consideration in answering each question. The eLI's perceptions of ICT for learning and teaching are integral to how they approach teachers and how they carry out their roles. The impediments that they see to doing their job are intrinsically linked to their views on how ICT integration can be better achieved. Their backgrounds and the environment that they find themselves in combine to not only add to their storied identities, but also shape their perceptions about ICT use.

The participants' storied identities are also related to the TPACK framework. Different participants focused on different aspects of the framework, with the overwhelming emphasis being on Technological Pedagogical Knowledge and to a lesser degree Technological Content Knowledge. There was no discussion by any of the participants related to Technological Pedagogical Content Knowledge and I'm not sure that I would be able to identify that knowledge and differentiate it from the other domains in any meaningful way. Through the study, evidence certainly did present itself that indicated that the A in TPACK would be better served by the word Administration rather than And, for two reasons. Firstly, there is a large amount of administration that teachers need to do on a daily basis as well as regularly such as reports. Also all of the participants discussed the leverage that Administrative tasks provide when trying to encourage staff to incorporate ICT into their classroom practices. If the devices have to be there,

then it is much more likely that they will be used and experimented with by the teachers.

The actions that the participants took were influenced by their storied identities. The way that each of them interacted with staff can be seen as a reflection of the identity that they have developed within this role. They each carry out their duties in ways that indicate the effect that temporality, place and Personal and social have had on them. As those commonplaces of narrative help define a person's identity they also influence how the person operates because they are always within an individual's zone of influence. Actions such as taking over the library space and role, being part of committees to be able to use influence, putting in systems that will be of benefit to staff and presenting to teachers with a hook are all examples of how the eLI's identities do influence their support of teacher adoption of ICT for learning and teaching.

Finally, knowledge of eLI's storied identities can help as a guide for other eLI's when trying to support teachers use of ICT. As Steve said:

...one way to be smarter is by getting feedback from other people.

The reason why Professional Learning Communities have become popular (Hord, 2009; Stoll & Louis, 2007) may have a lot to do with this idea that when teachers listen to other teachers – their successes and failures, they do learn. It becomes a reciprocal sharing community as the storyteller gets feedback from the interested listeners/readers/viewers, which in turn may guide them as well. It is no different for eLI's. By sharing their stories, discussing approaches, voicing

fears, identifying impediments and expressing their frustrations with each other, eLI's will be able to learn from each other's narratives. I know I did.

Chapter 9 Literature Review Arising from the Research

This chapter is written as a precursor to a discussion of the key findings and implications of the research that follows in Chapter 10. It is provided to offer some insight into the unexpected findings or themes that became apparent as the research progressed and was analysed. It will be broken into three distinct areas: the changing role of the library, the intrinsic nature of the TPACK context circle and what is implied to be housed within it, and the literature surrounding educational change leadership. This brief addition to the earlier review of literature should enable connections to be made between the findings of this study and current literature, adding further to what is already known.

9.1 Reinventing the Library

Two of the participants, Sharon and Clarke spoke at some length about the role of the library in their schools. In particular they discussed the role of the librarian and the library itself within the school. Both participants saw that there was a need to redefine the role that the librarian staff undertake, as well as a rethinking of the library space. Sharon even took on the role of Librarian within the study timeframe. This trend is supported by the literature on the subject stating the need for libraries to morph. Luke and Kapitzke (1999) describe Eisenberg and Berkowitz's (1996) 'Big Six' approaches to library skills and information skills as "define the task or problem; select the resources that will solve the problem; locate the sources; engage with and use the materials; synthesise the information; and evaluate the problem and the problem-solving process" (p.

478). The authors state that, “In the last decade the ‘librarian’ was reinvented as an information manager, media specialist, resource consultant, knowledge navigator, virtual librarian and cybrarian” (p. 476).

Luke and Kapitzke (1999) go on to argue that “‘The Big Six’ are obsolete because they embody assumptions of print culture and of a linear scientific method that are being superseded by other modes of inquiry, thinking and analysis” (p. 484). The traditional view of the library was that it was “the place students went to acquire a selective tradition of information use and its application to a curricular unit” (Kapitzke, 2001, p. 65). Now the modern librarian is focused on providing “information literacy tuition, creating and maintaining electronic resources, delivering quality learning spaces, metadata development, licensing digital material [and] collecting and digitizing archival material” (Hawthorne, 2015, p. 3). As Kapitzke (2001) described it, “the cybrary must be both a place and a space not only for learning information but also for learning how to use information … for learning about information… and for learning through information” (p. 65).

9.1.1 The Millennials.

A major discussion within the literature surrounding the need to change the way libraries should be operated relates to the demands of Millennials. This is particularly true of University libraries, but also school libraries as students in both primary and secondary education would share many of the traits possessed by “a person reaching young adulthood in the early 21st Century” (Oxford Oxford Dictionary, 2016). I hesitate to describe Millennials here as it is superfluous to the arguments that have been put forward, but needless to say, their attitudes,

expectations and functionality within educational institutions have been studied with the following recommendations being provided for catering for this generation of society.

The most relevant point is that "Millennials have such vastly different needs and expectations than 'Boomers' that library staff are forced to rethink and redesign library services, technologies and buildings" (Sweeney, 2005, p. 165). Sweeney points out unsurprisingly that "libraries can, and indeed must, remain relevant to every new generation and its knowledge needs" (p. 165). Sweeney goes on to advise that "library hours and service availability must be based upon Millennial needs, not the convenience of the library staff" (p. 168).

Sweeney is not alone in recommending diverse library regimes. However, not all within the profession share his views. Freeman (2007) claims that "Libraries were to become obsolete with the advent of the internet" (p. 1). He has, however, observed that "The library is the only centralized location where new and emerging information technologies can be combined with traditional knowledge resources in a user-focused service-rich environment" (p. 1). So, far from subjecting librarians to the same fate as blacksmiths and factory line workers, Freeman offers a number of solutions as a way forward for libraries to stay relevant in 21st Century Education.

He groups these solutions into two categories; Libraries as learning laboratories, which is what Sharon focused on and secondly a place for contemplation where "students may like the new technologies but the favourite place is still the reading

room" (Freeman, 2007, p. 1). To achieve this multi-functional space, a dual, multidimensional characteristic needed to be taken into consideration – that of the use of technology within the library infrastructure combined with the ability to cater for divergent needs of the patrons frequenting the physical structure.

A study by Shill and Tonner (2003) found that the "demand for group study spaces often exceeds library capacity while there is parallel demand for enclosed single use rooms" (p. 451). This concept of space within the library has taken on a multiplicity of meanings. Are we talking about space to work quietly, a space to collaborate, a space to make, a space to learn, a space to connect with society or community or a space to innovate? The 21st century library needs to provide 'space' for all of these endeavours as well as unforeseen demands that the library is well placed to deal with. Millennials may be a catalyst for this change but they are just one group who benefit from such redesigns.

9.1.2 Technology in the library.

Interestingly, when it comes to technology, Millennials have some surprising demands. New Jersey Institute of Technology, for example, imaged all their computers in the information commons the same, as is practised by most institutions in order to make administration of the devices simple. However, the Millennials, wanted to see the devices set up more specifically. They wanted "a few computers that could only be used for five minutes just for printing, a couple of computers only to be used with scanners, a few computers that could only be used for 30 minutes for quick jobs and so on" (Sweeney, 2005, p. 168). The number of niche demands of the patrons grew so much that mirror imaging was

no longer viable. Of course, the demands of Millennials are just a few of the many technological factors that are helping to drive library change.

As described by Delaney and Bates (2015), Web 2.0 tools, for example, "can contribute to the continued relevance and visibility of libraries, and can be used as a continuing professional development tool to keep librarians professionally engaged and relevant, and can be used for outreach" (pp. 12 - 13). In a keynote presentation titled 'Getting Real about Social Media', Hall challenged librarians to use social media "to provide additional platforms for 'traditional' information delivery" (Hall, 2010b slide 22). She went on to throw this challenge to the audience; "How we conceive relationships – between tools, information professionals, end users – will determine the boundaries of service innovation" (Slide 22).

According to Sweeney (2005) "librarians must merge almost all library services digitally with the internet to meet the expectations of the Millennial generation" (p. 170). The Helsinki University of Technology (HUT) did exactly this in response to an increasing trend described by Carlson (2001) as "The Deserted Library". Instead of installing a Coffee Shop within the library walls, HUT surveyed the expectations and attitudes of the students and discovered that "95% of the student clientele carries a mobile phone and that this clientele would like to receive library information via their mobile phones" (Pasanen-Tuomainen & Muhonen, 2002, June). This started a project the authors have called library in your pocket which provides students with online library services such as reminder notices, renewals, reservations, loan lists, general queries, payment of

fees and an alert service (Pasanen-Tuomainen & Muhonen, 2002, June, p. 4). The authors reported that the service was becoming increasingly popular with the clientele and quoted one student as saying "The mobile services are the first useful service of the library that I have seen" (Pasanen-Tuomainen & Muhonen, 2002, June, p. 5).

Apart from putting library services online for students to use, Clarke and Perry (2015) report on a 2015 Pew library survey which found that "70% of respondents say libraries should help people learn how to use new technologies; and 76% say libraries should offer programs to teach people how to protect privacy and security online" (p. 7). The authors also reported on an initiative called Coder Time being run by Sylvia Aguinaga at the Los Angeles Public Library to give people an opportunity to learn how to code. The authors quote Aguinaga as saying "Our world is increasingly run by software, and I think we need more diversity in the people who are creating it" (p. 8).

Participants, Sharon and Clarke both described the changing nature of the library at their respective schools. They may not be aware of the research that has been described above, but in both cases they articulated their awareness that the traditional role of the library within their schools needed to change. This change was necessary to reflect the demands of the clientele – the students and teachers who wanted it to be more than just a repository for books and a quiet space to escape to at lunch time.

9.2 TPACK and the Contexts Circle

Part of the research findings related to TPACK and in particular the intrinsic nature of the TPACK context circle and what is implied to be housed within it. I thought it would be useful to provide the reader with a sample of what the literature says about the context circle and what sorts of things are implied to be within its scope. A diagram of the model in Chapter 3 of this thesis (see Figure 3.1) shows the Contexts circle.

According to Phillips (2013), who was describing the three overlapping circles and seven potential forms of knowledge represented by the TPACK model, "Bounding these different forms of knowledge is the context in which teachers acquire and exhibit their knowledge" (p. 2). He goes on to describe workplaces as the context for TPACK development for in-service teachers and states that:

> Included in the idea of context are such things as the school environment, the physical features of the classroom, the availability of technology, the demographic characteristics of students and teachers including prior experience with technology, the particular topic being taught and the preferred instructional methods of the teacher. (p. 47)

Cox (2008) describes the effect that context has on the teacher stating that "the effect of context is that TPCK is unique, temporary, situated, idiosyncratic, adaptive, and specific and will be different for each teacher in each situation" (p. 47).

Further, Bauer (2014) in his book *Music Learning Today* describes the context as the situated nature of TPACK. He states that this is "the environment of an

instructional situation and may include the physical setup of the classroom, the quantity and quality of technology that is available, student demographic and psychosocial characteristics and the general atmosphere of the school" (p. 16). He rightly states that the factors that make up the context "provide additional influences and constraints on the TPACK model" (p. 16) and that a key issue for teachers is how to best deal with and utilize the context in which they find themselves.

A group of graduate students from the University of Michigan provided a diagrammatic view of the context influences on TPACK see Figure 9.1. The diagram identifies Teacher Training, Experiences, Students, Resources, Objectives/Aims and Attitude as just "some of the variables which help and shape an educator's Technological, Pedagogical, and Content Knowledge" (EDT514, 2016). In their Wiki they state that the diagram represents "some of the variables which contribute to and impact all areas of [TPACK]" (EDT514, 2016).

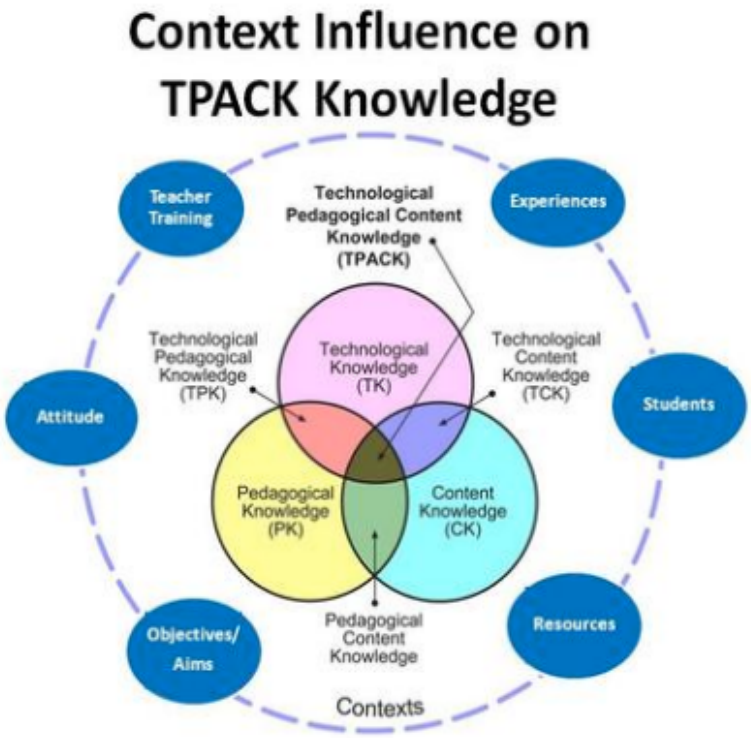

Figure 9.1. Context Influence on TPACK Knowledge (EDT514, 2016)

A further diagram which has found wider acceptance was initially proposed by Porras-Hernández and Salinas-Amescua (2013) in a paper which aimed to strengthen TPACK by including teacher narratives and providing a broader notion of context. They broke context into three distinct levels. The first is the macro context, "defined by social, political, technological, and economic conditions" (p. 228). Next is the meso context level defined as the social, cultural, political, organizational, and economic conditions established in the local community and the educational institution" (p. 228). Third is the micro level. This level is concerned with conditions within the class such as "available resources for learning activities, norms, and policies, as well as the expectations, beliefs, preferences, and goals of teachers and students" (p. 230). Their diagram is reproduced (see Figure 9.2) together with a further diagram attempted by Rosenberg and Koehler (2015) (see Figure 9.3) who created the representation

in response to their observation that "it is clear that context remains an underdeveloped and under-researched component of the framework" (p. 188).

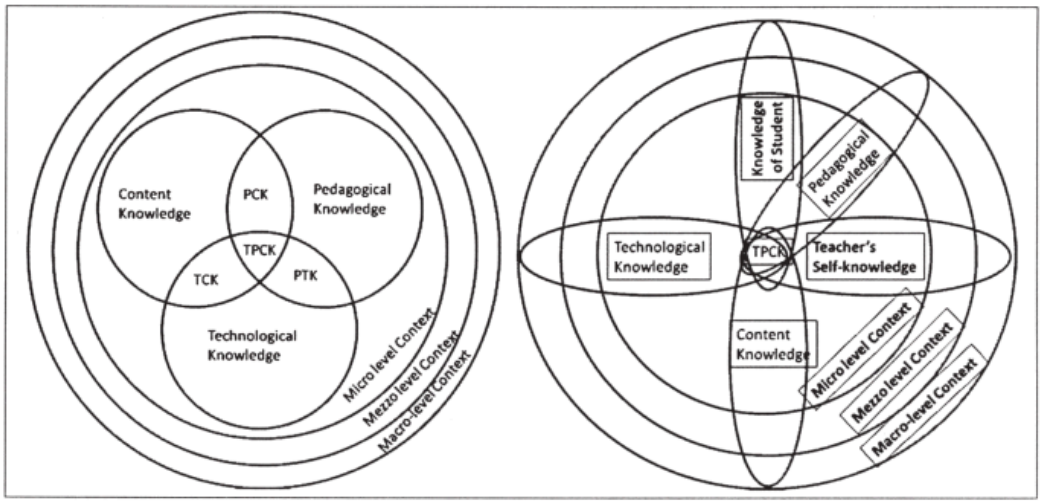

Figure 9.2. Porras-Hernández and Salinas-Amescua's suggested representation of the TPACK framework integrating two more types of knowledge and different context levels.

(Porras-Hernández & Salinas-Amescua, 2013, p. 232).

Rosenberg and Koehler (2015) reviewed the literature to determine the extent to which Context was treated when authors wrote about the TPACK framework. They stated that "research has found that context is frequently missing when researchers describe TPACK in their work" (p. 186). Whilst it is not within the scope of this thesis to go into the detailed findings of their research, it is interesting to note that among their key findings was the statistic that "context was included among 36% of the 193 peer reviewed journal articles about TPACK" (p. 195). Of those articles that did mention context, Rosenberg and Koehler also found that the meanings associated with context varied to a large degree. They found that of the macro, meso, and micro context levels, some were mentioned often such as classroom factors (micro) in as many as 84% of articles whilst

others such as societal factors (macro) were mentioned only 14% of the time (p. 195).

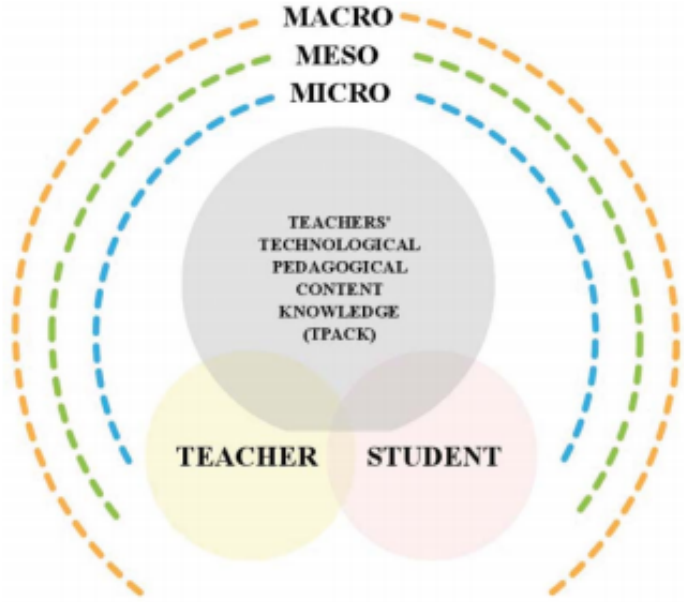

Figure 9.3. The Rosenberg and Koehler (2015, p. 189) representation of the conceptual framework advanced by Porras-Hernández and Salinas-Amescua (2013).

Part of the key issues and implications arising from the research presented in this thesis surrounds the TPACK model as it was presented in its 2006 form (Mishra & Koehler, 2006). Those implications are discussed in some detail in the next chapter, and like a number of authors mentioned, this research did find some shortcomings in the original model and proposed changes, based on the findings of this study, will be provided.

9.3 Educational Change Leadership

The final area that this post research literature review will highlight is some of what has been written in the field surrounding educational change leadership and the impact that such leadership has on factors such as the rate of change, acceptance and associated pedagogical practice shifts. It will begin with an

identification of exactly who are leaders in ICT integration and their perceived as well as actual role in the process.

9.3.1 A brief background to leadership in ICT.

As identified by authors such as Flanagan and Jacobsen (2003) and more recently McDonagh and McGarr (2015), leadership in ICT "has been assigned to a specific person in the school other than the principal since very few principals have used computers in meaningful ways with children, and therefore lack the requisite pedagogical vision and experience" (p. 56). Instead, the role has hopefully fallen to a "charismatic individual who throws his or her weight behind an innovation thus overcoming indifference or resistance that the new idea may provoke in an organization" (Rogers, 2003, p. 734). They are distinguishable from their peers because they demonstrate enthusiasm for the innovation, they have a clear vision for how the innovation can be incorporated into pedagogy, and they are able to involve others in supporting it (Howell & Higgins, 1990; McGarr & McDonagh, 2013).

The word 'hopefully' was used above as often the role fell on the person in the school who was seen as an early adopter of innovation or the computer teacher or someone else technically competent. This could prove to be a problem because "a key function, assumed as part of the ICT coordinator's role, was to act as a 'change agent' encouraging colleagues to integrate ICT" (McDonagh & McGarr, 2015, p. 56). Another issue coming from this study is the need for empathy and relationship building to be successful in promoting ICT integration. Technical competence does not necessarily equate to strong leadership skills. The School

Improvement Overview describes the qualities of effective leaders as individuals who create "cultures of high expectations, provide clarity about what teachers are to teach and students are to learn, establish strong professional learning communities and lead ongoing efforts to improve teaching practices" (Masters, 2010). Authors such as Law (2009) have called upon education systems to make "leadership and teacher professional development initiatives, promoting a strong school-based culture of support, professional collaboration and shared decision making a 'priority area' towards the goal of bringing about '21st century oriented pedagogical use of ICT' in schools" (p. 37).

The reality of what the coordinators can actually achieve was highlighted in an article based on research carried out by McGarr and McDonagh (2013) where they used a combination of interviews and questionnaires to examine the role of ICT coordinators in 37 schools in Ireland. Their findings pointed:

> … to a gap between the rhetoric of the position and the reality on the ground. At a policy level the ICT Coordinator is viewed as the ICT Champion and visionary for the school, one that is looking 'over the horizon' at new opportunities; however, at a school level the role is quite different where their primary duties remain largely technical. (p. 279)

This is in contrast to what the literature is saying that "the role has now evolved into one of pedagogical champion rather than the electronic janitor … but as the research found there was only one teacher operating in this quadrant" (p. 280).

Interestingly, the research also found that not all the coordinators who took part in the survey valued the transition from technical to pedagogical support. The

issue of how one would be viewed by other staff if they began advising staff on teaching methods was quite a concern. One respondent, when asked whether he would like to provide pedagogic advice commented:

> I certainly wouldn't no. I suppose we are protective of our little environment. I wouldn't like it if somebody came in and told me how to do my job. It's a delicate area, you know, teachers are pretty much insular in their own subjects really. (McGarr & McDonagh, 2013, p. 277)

9.3.2 What makes a good leader.

There is a volume of literature that focuses on what makes a good teacher leader particularly with regard to leaders with the use of technology. Research findings from a study involving 4000 U.S. teachers leading technological change found that Teacher Leaders were more likely to:

1) have made and continue to make higher investments in their own education.
2) promote knowledge construction rather than engage in direct instruction.
3) develop instructional practices, both with and without technology, that are theoretically tied to their constructivist philosophy.
4) use computer technology for teaching and learning.
5) integrate computer technology into their classrooms in ways that support meaningful thinking and involve collaborative project work and sharing of ideas with their peers.

(Riel & Becker, 2000, p. 1)

The study also found that teacher leaders were on average five years older than other teachers and possessed five years more experience. The authors of the study acknowledge that this is not surprising, but they do go on to argue that "this

finding runs contrary to assertions often made about teachers, such as that older teachers, educated at a time when teaching was seen as a more solitary activity, might be less likely to be involved in professional activities" (p. 15).

Other findings from the study carried out by Riel and Becker (2000) reveal that teacher leaders are "more likely to have their students use computers on a regular basis during class time than are Private Practice Teachers" (p. 23). The article describes Private Practice teachers as "teachers, [who] without a sense of agency or authority beyond the classroom, engage in a form of 'private practice' behind closed doors" (p. 2). Among other things they found that Private Practice teachers earned lower grades in school, attend less professional development and "only 4% of the Private Practice Teachers fall in the category of Highly Active Computer Users" (p. 33). They also found that "teacher leaders are more successful in implementing their educational beliefs in the classroom" (p. 22). One final finding was that "Teacher Leaders … are far more constructivist in practice than [other] teachers" (p. 20).

So summarizing the findings in relation to what makes a good teacher leader, they need to be actively involved in their own education, they have a constructivist philosophy and actually carry it out in their own classrooms and they have their students often using technology as part of the learning process. Of course this may be an over simplification of the research. However, it does support the claims of Hancock (1990) and more recently McGarr and McDonagh (2013) who define the role of ICT Coordinator as "a mentor for students, as a role

model for the teachers and as a strategic person who supports the administrative staff and the board".

As this study highlighted, participants relied heavily on support from the school leadership team, and could not affect the change that they were trying to bring about without such support. As Durrant (2004) concluded from British research, "holistic school reform without recognition of teacher leadership through agency, authority, and action is conceptually incomplete and unlikely to result in enhanced 'capacity'" (As cited in Crowther, Ferguson, & Hann, 2009, p. 4). One of the leadership dimensions discussed by Robinson (2010) is principals should be "leading through promoting and participating in teacher learning and development" (p. 3).

Ned in particular experienced difficulty achieving his goals and interestingly the majority of his senior executive including the Principal and Deputy chose not to take part in teacher learning and development that he offered to the staff. This is in contrast to the suggestion within the Teachers as Leaders Framework of Crowther et al. (2009) that teacher leaders, in order to:

> translate ideas into sustainable systems of action [need to work] with the principal, administrator, and other teachers to manage projects that heighten alignment between the school's vision, values, pedagogical practices and professional learning activities. (Crowther et al., 2009, p. 3)

9.3.3 What is happening on the ground.

There are a number of leader driven programs in place due to innovative leadership in ICT integration. Mentor programs are in place in a number of schools that help colleagues and such a program also “recognizes and rewards the talent and expertise of master teachers [who] are able to use their extensive knowledge of teaching in specific school contexts to help colleagues who may be new to teaching or new to the school” (Riel & Becker, 2000, p. 3).

The authors state that an opportunity to observe other established teachers, model their behaviours and receive meaningful feedback leads to a culture of collaboration. Riel and Becker (2000), and other authors such as Hargreaves and Dawe (1990), do warn, however, that such practices, if not set up correctly may lead “to contrived collegiality rather than a culture of collaboration” (p. 3).

One of the more traditional approaches to leading teachers towards new practices in the classroom is to bring in outside experts in teaching and learning. “While their knowledge gained from years of practice–is undervalued” (Riel & Becker, 2000, p. 4), this can lead to the misguided view of "teaching as technical, learning as packaged, and teachers as passive recipients of ‘objective research’" (Lieberman, 1995, p. 591). Instead of this ineffective form of coercion, new forms of professional learning are required which, as described by Darling-Hammond and McLaughlin (1995) become “occasions for teachers to reflect critically on their practice and to fashion new knowledge and beliefs about content, pedagogy, and learners” (p. 597).

However, the research that Riel and Becker (2000) carried out as part of a 'Teaching Learning and Computing – 1998' survey sampling 898 schools in the United States found that the "current institutional structure of schools supports private practice teaching providing minimal incentives to reward teachers who invest heavily in their continual learning" (p. 33). This is quite a concern when one thinks that the survey indicated that the education system is designed to most support a group of teachers who practice:

> direct instruction tied closely to textbook materials with a high value on convergent thinking and view tests as a valuable strategy for assessing this content accumulation. They engage in a practice dominated by knowledge transmission where students are rewarded for acquiring factual information. (p. 33)

Lee (2006), discussing the issues of creating "ICT-enriched Learner-Centred environments" (p. 203) in Hong Kong, cited the work of Riel and Becker (2000) when describing how to undo the conventional thinking surrounding the teaching profession. When discussing the two types of teachers that Riel and Becker (2000) described, Lee (2006) stated, "It would be reasonable to say that at this juncture a significant portion of Hong Kong teachers would fall into this [private practice teacher] category" (p. 210). Cuban et al. (2001) reporting on their study of two high-tech high schools in California observed, "few fundamental changes in the dominant mode of teacher-centred instruction had occurred…. Even in computer-based classes, teacher-centred instruction was the norm" (p. 825). This resistance to change teaching practices, according to Ertmer (2005), is because it requires a "second order change – change that confronts

teachers' fundamental beliefs, and thus, requires new ways of both seeing and doing things" (Ertmer, 2005). If Teacher Leaders are desired by school executive to bring about change in ICT use then encouragement of the sorts of characteristics that Riel and Becker (2000) described (see 9.3.2 *What makes a good leader*) is necessary rather than an acceptance of the characteristics of Private Practice teachers.

In more recent times, Moyle (2014) expressed frustration at papers such as the *Melbourne Declaration, Shape of the Australian Curriculum: Civics and Citizenship, Australian Professional Standards for Teachers* and the *Australian Professional Standard for Principals* for their disparate and sometimes rudimentary treatment of the incorporation of ICT into the Australian curriculum. She sees the lack of mention of 'digital citizenship' in Civics and Citizenship as "a missed opportunity, and dates the Australian Curriculum to the 20th rather than the 21st Century" (p. 43). She also observed that "the *Australian Professional Standards for Teachers* and the *Australian Professional Standard for Principals* address the issues of teaching and learning with technologies, democracy and digital citizenship in separate, different and inconsistent ways" (p. 43). By democracy she is referring to Dewey's notion that democracy should be taught in schools by being democratic in the classroom as this will lead to citizens who can take their place in society (see Dewey (1916).

Moyle (2014) concludes her paper by stating:

> … there are no substantial connections made in the peak Australian school education policies, between the use of technologies in teaching and

> learning, and the teaching of civics and citizenship. The policies are silent on the concept of 'digital leadership', yet the introduction of this concept would be one way in which the teaching of democracy and democratic processes could occur with the use of technologies. (p. 47)

She observes that these inconsistencies and lack of connections will provide real challenges to principals as they attempt to implement "the Australian Curriculum and the respective professional standards in their schools" (p. 47).

According to the literature it can be seen that there are Teacher Leaders who are undertaking the task of helping others to incorporate ICT into their curriculum areas. They have some support, but are being frustrated by a system that is really designed for Private Practice teachers. Also there are policies in place that do not share consistent goals and vision for the incorporation of ICT. Another obstacle is outdated Professional Learning practices such as bringing in outside experts when there may well be many internal experts within the school whose talents and experience are being undervalued.

The narratives provided by the participants in this study confirm the findings within the literature. Ned often articulated the real difficulties he faced leading significant change within his school including going to a 1 to 1 device policy and encouraging pedagogic change. He was not offered any leadership development and did not have the support of the entire senior executive. Sharon was having much more success in implementing change in her school. This is not surprising when one considers that she enjoyed the support of the entire senior executive

and was sent overseas on numerous occasions to be trained in Project Based Learning and Problem-a-Day pedagogies.

To conclude, there is a large amount of research in the areas of Change Leadership, Library change, and contexts within the TPACK framework that has not been described in this brief literature review. The purpose of this post research review was to alert the reader to some of the work that has been done in these areas, which I thought necessary to do as I did not initially expect these areas of research to come up in my study. This thesis will now continue with the final chapter discussing key issues and implications arising from the study. Hopefully the reader, having read this chapter, will be more enlightened about the various outcomes that the research has offered.

Chapter 10 Conclusions

This chapter addresses the key issues and implications that were identified from the findings of this research study. The chapter begins with a synthesis of the research presented in the beginning chapters. It then goes on to describe the findings of this study and their significance. Implications of how the findings may affect current theory are discussed, before a description of implications for eLearning Integrators and school executive. It concludes with my reflections on the process of completing this study.

10.1 Synthesis of the Research

The beginning chapter of this thesis offered a glimpse into my journey along the path of incorporating ICT into my own classroom practices as well as taking on the role of eLearning Integrator in a number of schools over the last 30 years. It also attempted to bring a personal historical perspective to the study by tracing the sorts of technologies that I worked with as hardware improved and Educational Software developed. It traced my journey from Primary to Secondary and even Tertiary education and described what I considered the most significant events along the way.

Chapter two expanded on the historical perspectives by describing formally, what has taken place in the Education Sector since the mid 1940's but more specifically over the last 35 years or so. The chapter described the very early years, but focused on what has occurred since the advent of the personal computer. The question of why teachers should integrate ICT into their pedagogy

is raised in Chapter two together with an indication of what various bodies were trying to do to determine why there was a lag in classrooms and what they could do to encourage increased ICT use. It also focused on what was happening in Australia from the time of the Hobart Declaration in 1989 through to the Melbourne Declaration on educational goals for young Australians (MCEETYA, 2008) and the Digital Education Revolution.

Chapter three focused on ICT integration in the classroom and the research surrounding it and the significant role that teachers play in technology adoption. It is here that pedagogy is described as being important to successful ICT integration. The chapter also discussed a number of studies and their findings related to why such integration has been so slow in many classrooms. Key among these are teacher beliefs but a number of other first and second order barriers are described. The chapter continued by focusing on what factors are conducive to ICT integration and introduced the TPACK framework as a way to determine what knowledge teachers need as well as contextual, cognitive and affective factors that also need consideration? The chapter concluded by describing one approach, which seems to provide a way of dealing with many of the impediments to ICT adoption.

Chapter four introduced the ICT Coordinator, the eLearning Integrator and the Digital Learning Coordinator. The chapter identified the eLI as an agent of change or leader of learning as well as an agent of pedagogy. The chapter described the shift from learning about computers to learning with computers. It also described some more recent changes including Web 2.0 technologies as well as the

increased use of Learning Management Systems and wireless technologies. It identified that now the time is right for major change in ICT integration as students and teachers have a variety of devices that are affordable enough for a 1 to 1 environment to be achieved. The chapter concluded by asking the question where to from here?

Chapter five introduced the section of the thesis that described the actual study. It presented the Narrative Inquiry methodology for conducting a study that attempts to make meaning of human storied identities. It discussed teachers as curriculum makers – drawing on their own experiences to inform their professional practices. It also looked at using Narrative Inquiry as a way to describe teacher education or professional learning. The chapter identified my role as researcher in a Narrative Inquiry approach and cited some challenges to Narrative Inquiry as a methodology. This allowed me to highlight some of the pitfalls that I would try to avoid as I progressed though the study.

Chapter six described the methodology used in the study, starting with a description of the four research questions that the study was designed to answer. It outlined the thinking behind the participant selection process and emphasized why a qualitative study was appropriate. It detailed the way that Narrative Inquiry was going to be used to supply answers to the questions and analyse data that were collected. The Commonplaces of personal/social, place and temporality were described as integral to the approach used to describe and analyse the data. The chapter also outlined the methods used for collecting the

data from the four participants and the strategies used to put all the data together in a coherent manner.

10.2 Findings from the Study

Findings from the study were described in Chapters seven and eight. Chapter seven was used to supply the reader with the storied identities of each of the participants. Each was described in turn, focusing on their experiences and philosophies as well as their methods for integration and factors impeding their progress. Whilst this was by far the longest chapter I thought it necessary to give the reader as much insight as possible into the narrative that each participant shared with me. Some observations were also made in this chapter related to the data that the participants supplied.

The chapter relied upon the use of the commonplaces of temporality, place and the Personal and social dimension to supply the reader with insights into the actions that the participants took in order to help teachers integrate ICT into their pedagogy. This methodology was carried over to a degree into Chapter eight that attempted to bring much of the collected data together in an analysis based on both the shared and divergent experiences of the participants. It addressed each of the four questions in turn, supplying evidence used to answer each of the research questions. It relied on anecdotes and observations from a combination of the storied identities to provide a coherent discussion of the research questions.

The study led to the conclusion that an understanding of the storied identities of eLI's is a useful way to analyse what they are doing in the schools and why they choose the approaches that they follow. The study found that the storied identities are inseparably linked to the visions for using ICT in learning and teaching that eLI's have and espouse. Their stories play a dual role in both revealing something of their character and their perceptions as well as contributing to or helping define those same characteristics and perceptions. Their experiences add to their narratives, which subsequently inform their decision making as they deal with the daily issues they are faced with. Their identities also influence the bigger picture issues, including future planning, pedagogic practices to follow and even teacher professional learning decisions.

The study led me to the conclusion that whilst the TPACK framework may not consciously be considered by eLI's, at least some parts of it do play a significant part in the decision making that they need to do. In particular, Technological Content Knowledge and Technological Pedagogical Knowledge are often used by eLI's to push their agendas, or help focus staff interactions. Throughout the study there was a constant mention by all of the participants of the importance and usefulness of Administrative tasks. They are a necessary way for teachers to operate in the modern classroom and they also provide leverage for increased ICT use. From this a conclusion of the study was that Technological, Pedagogical, Administrative and Content Knowledge – TPAaCK may be a better description of the reality of the use of ICT within schools.

In addition, findings from the study suggest that their identities greatly influence how eLI's support teacher adoption of ICT for learning and teaching. As their identities are informed by their experiences, they are particularly influenced by past incidents, prior knowledge and beliefs. These experiences can be acquired through working in industry, shaped by decisions of a school's Senior Executive or informed by dealing each day with staff who are often agitated or frustrated by technology or cynical about its use and importance in the classroom. This makes decisions about the type of support eLI's can give reliant on their storied identities. It also influences the amount of support that can be offered and the focus of the support, which according to the data gathered, is often of an administrative nature rather than pedagogically based.

The study also revealed that knowledge of eLI's storied identities was very useful in informing other eLI's as to how to go about supporting teacher adoption of ICT for learning and teaching. This may account for the growing trend towards professional learning communities where eLI's can come together to share their experiences, their beliefs and their successes and failures in an environment that is motivated by the potential of shared knowledge. Understanding the nature of the participants, analyzing the approaches that they take and being able to relate to their difficulties combine to provide a guide for other eLI's to follow when also trying to encourage ICT use in classroom practices.

10.3 Significance of the Findings

It is important that the technology is viewed not as an end in itself but as a tool for achieving more fundamental change in education, particularly pedagogic

change. The technology itself cannot be the driver as can be deduced from the failure of the Digital Education Revolution. Rather the focus should be on the adoption of classroom practices that provide for the cognitive processing necessary for learning. This may include pedagogies such as Project Based Learning, Inquiry Learning, Flipped Classrooms and other student centred methodologies or more direct instructional guidance such as that called for by authors such as Kirschner, Sweller, and Clark (2006). In either case the ICT needs to be viewed by the teacher as a necessary tool to achieve pedagogic change. Similarly, administrative issues can also assist in this adoption. Continuous reporting, lesson by lesson roll taking, and the myriad of other activities that teachers now have to do online provide another conduit by which ICT integration can be promoted.

The study also highlighted the necessity of redefining the role of Library staff and Technical Support personnel to one where they help achieve ICT integration by becoming champions of the technology or, if they already are, by becoming comfortable in helping teachers in the classroom. Due to the changing nature of both roles from their traditional descriptions, there is an opportunity for many schools to increase the support given to classroom teachers with little if any extra expense.

The need for the eLI's to be part of much larger planning groups was also highlighted as a significant and necessary step in gaining wider staff support for ICT in learning and teaching. Committees which focus on planning projects, on how to use open spaces, on bringing in initiatives like a 1 to 1 environment as

well as gatherings like the Critical Friends process are all ways that the need for ICT's to play a role in transforming the learning and teaching environment can be further promulgated. It is effective because it does not have to take centre stage, but rather can be put forward as an expectation along with other, just as important considerations like student wellbeing, differentiated learning and so on. The study also highlighted the necessity for the eLI's to have a capacity for leadership and an understanding of the relational nature of leadership for school improvement to occur.

The suitability of the TPACK framework as a guide for teachers to help them in incorporating ICT into their pedagogy was another significant question that arose from the study. Whilst this study is certainly not the first to question the TPACK framework and its efficacy, the study did highlight questions that others (Archambault & Barnett, 2010; Archambault & Crippen, 2009; Brantley-Dias & Ertmer, 2013) posed related to the boundaries between the various domains. Similarly, the study highlighted the underdeveloped context within the framework, adding to the research of others (Bauer, 2014; Cox, 2008; Porras-Hernández & Salinas-Amescua, 2013; Rosenberg & Koehler, 2015) in this field. Further discussion and recommendations for the TPACK framework are found in section 10.4 *Implications for Theory*.

These findings were taken back to the participants for their consideration as a way to further authenticate the conclusions that have been drawn. This gave the participants the opportunity to consider the findings as well as the opportunity

for them to voice their opinions related to what they read. In all cases the participants supported the findings.

10.4 Implications for Theory

The fact that the participants agreed with the findings and the arguments made in this thesis has an obvious implication for the narrative inquiry methodology used in the study. If the conclusions reached by the author are ratified by the participants whose storied identities were used to reach those conclusions, then it lends weight to the argument for the continued use of Narrative Inquiry as a valid approach to conducting research and analyzing data.

Another implication for theory is the finding that both Storied Identities and Administration have important effects on ICT integration by teachers and approaches taken by eLI's. This suggests that more investigation into the TPACK framework needs to be undertaken in order to make it more authentically represent the real world. As roles and context have changed since TPACK's conceptualization, it highlights the continued necessity for the framework to continue to be a work in progress. In its present form it does not mention the role that Technological Administration Knowledge plays in assisting eLI's to encourage staff. One can also only assume that it places storied identities into the broad context circle surrounding the Venn diagram as no explicit mention is made of teacher identity. The significance of the identities of eLI's as informed by their narrative in carrying out their role effectively is potentially worthy of incorporation into the model. As Technological Administrative Knowledge (TAK) is both a growing reality for all teachers as well as a significant form of leverage

for the eLI, adapting the model to suit its inclusion may also be worthy of consideration.

Along similar lines, one criticism of the TPACK framework has been the implied rather than explicit mention of a teacher's Knowledge of Students within the model. The actions of the teacher will be influenced by the students within the classroom. The decisions made about types of learning undertaken will in part be informed by the students regardless of the technology, pedagogy or content (Olsen, 2012). The suggestion is that a teacher's Knowledge of Students should become more visible within the framework. Whilst this criticism has not been addressed at any level in this paper, it is worthy of note and could provide a pathway to future research into the TPACK framework as a working model of the reality of ICT integration.

Given this, I propose what I believe to be a more authentic and perhaps useable framework (see Figure 10.1). This framework takes into account the parts of the TPACK framework identified in this thesis, together with the inclusion of Storied Identities, Administration Knowledge and teachers' Knowledge of Students. The first two of these have been discussed in this paper as being worthy of inclusion while the third is a possible candidate for future study. This alternate framework, called SISTPAaCK, is a reflection of findings from this study. It stands for Storied Identity, Students, Technological, Pedagogical, Administrative and Content Knowledge. An important distinction between this and the original TPACK model is that the centre of the original model, Technological Pedagogical Content

Knowledge is not present as it appears very difficult to describe and its components are covered by the other 'knowledges' or domains that are present.

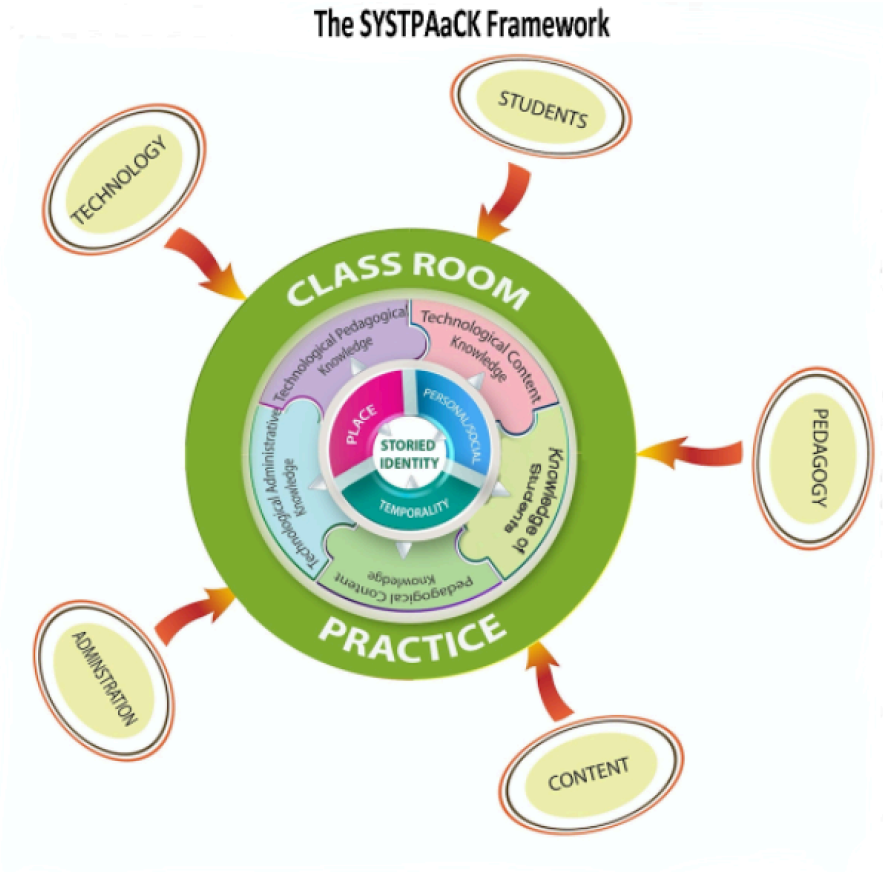

Figure 10.1. The SYSTPAaCK Framework

The model has Storied Identity as the central component, reflecting the findings of this research study indicating that a teacher's storied identity is most influential on their classroom practices including use of technology. Surrounding the storied identity are the place, temporality and personal/social commonplaces as described by Connelly and Clandinin (1990). These commonplaces describe the influences placed upon the teacher which influences the teacher's storied identity, hence the arrows pointing in towards the centre. Arrows also point out from the commonplaces, indicating that they also have an

influence on the 'knowledges' or domains that are required for effective ICT integration. Three of the surrounding domains, TCK, TPK, and PCK are as per the original TPACK framework. According to this study, they were the most discussed by the participants. There are only a further two, new domains. These are a teacher's Knowledge of Students and Technical Administrative Knowledge which was a significant domain used by all the participants in the study to help enact ICT integration by the teaching staff. Outside of the domains is Classroom Practice, which is a result of all that is within its sphere, so all that has been described previously. Surrounding the Classroom Practice are the external influences placed upon the teacher. This framework identifies five main influences, Content, Pedagogy, Students, Technology and Administration. These all place external demands upon the teacher and what they choose to do within their Classroom Practice.

10.5 Taking the TPCK out of TPACK

When devising the SYSTPAack framework, a major consideration as already described was that it was adding complexity to an already complex construct. Undoubtedly one of the most complex parts of the TPACK framework is the TPACK or TPCK as it is also referred to. To avoid confusion, for this section I will use TPCK to describe the centre construct within the model and TPACK when referring to the whole framework itself. TPCK is knowledge informed by an amalgamation of Technological, Pedagogic and Content knowledge. It is succinctly described by Harris and Hofer (2011) as "How to teach specific content-based material, using technologies that best embody and support it, in

ways that are appropriately matched to students' needs and preferences" (p. 213) I would like to change this a little and will do so after a brief explanation.

The reader would possibly have noticed that TPCK is absent in the SYSTPAaCK framework. This was intentional and some explanation, whilst not really part of this study, is warranted in order to ease the minds of readers who may have also been grappling with this construct. In particular, it may be difficult to determine how to identify TPCK and differentiate it from the other constructs within the framework.

As a researcher into ICT integration in educational settings and a practitioner in helping staff to achieve this, I have often struggled to describe to teachers seeking guidance exactly what TPCK is and how to seek it out – how to learn about it. I came to the conclusion that it was not a knowledge that could be taught or studied. In fact, given its nature, I would akin it to the role of a register inside a Central Processing Unit (CPU). It holds data which can be result of a combination of calculations and comparisons and it is held in memory only very briefly. It is not stored in long term memory and its role is to allow further processing to take place. It exists in time for a very brief period in a very specific context. One way of describing this is that it exists in the moment as it emerges in the context of the other knowledge a teacher brings. The question then is; can it exist outside of that moment?

For this reason, I have preferred to consider TPCK as an action. I see it as the result of the combination of the six other constructs. This is usually manifest in

the form of teacher instructions to a given group at a given time which perhaps will never be repeated. However, it may be called upon in a similar way to experience when dealing with similar situations requiring content, pedagogy and technology to merge. In other words, it is something teachers do rather than learn or study about. When looking for academic literature to back my claim, I was struck by the Harris and Hofer (2011) paper describing research which included a small number of teachers. The study sought data from the teachers asking them to talk about the various constructs within TPACK. When it came to TPCK, "The notion of "fit" came up repeatedly in the comments of five of the seven teachers consulted" (p. 225). The authors went on to conclude that "'Fit' seemed to be how they consciously both conceptualized and operationalized TPACK." This coincided with my own thinking about TPCK. If fit is an action (things fit into place, we make things fit), then TPCK as the centre of the framework should be described as a resultant action rather than a steadfast knowledge. For this reason I would like to suggest an alternative beginning to the Harris and Hofer (2011) quotation used earlier. It may be just as valid, and less confusing to say that TPCK is "*The actions we employ to* teach specific content-based material, using technologies that best embody and support it, in ways that are appropriately matched to students' needs and preferences". Of course the acronym would have to change, but this may be something worthy of consideration by others looking at the TPACK framework as it evolves.

Adding further weight to this proposed line of consideration is the figure used by Phillips, Koehler, and Rosenberg (2016) which shows an updated TPACK diagram that uses 'TPACK enactment to further define the central construct of

the TPACK framework (see Figure 10.2 below). Again this is in line with my thinking about the central construct and what it actually represents. Perhaps the academic community can begin to consider TPCK as a culmination - not in the form of knowledge, but rather in the form of "this action seems to fit". If that were to happen, then perhaps the most complex construct within the framework transforms into the logical, actionable consequence of a number of knowledge constructs. This consequence may never be repeated, but could be called upon like other experiences, which are not all about knowledge, rather relying upon a combination of factors coming together to give people a useful course of action.

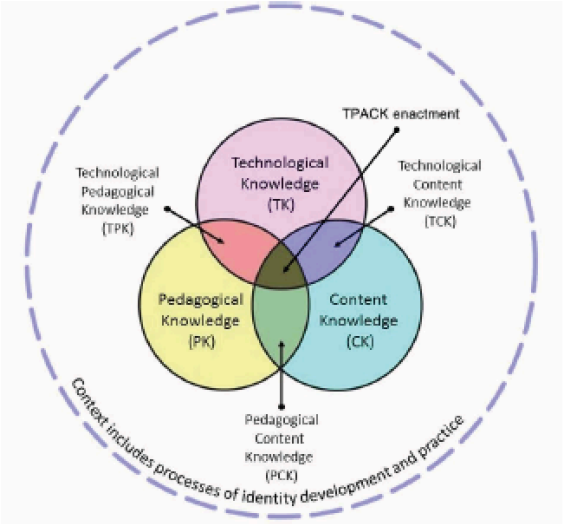

Figure 10.2. An elaborated representation of TPACK enactment in a CoP (Phillips et al., 2016).

As an analysis of the TPCK construct was not part of this thesis, but rather its inclusion a result of careful consideration, I will leave discussion of it at this point. I would, however, encourage others to consider looking into this proposed evolution in more depth to determine whether it has merit for serious investigation.

10.6 Implications for eLearning Integrators

The eLI has a crucial role in driving change within the education sector. Change has been called for over a long time to try to bring classroom practices out of the industrial model of chalk and talk with the teacher being the font of all knowledge. Societal expectations and the advent of the always connected student have begun to force educators to rethink how to engage learners in the 21st Century. The eLI has to become an agent of change – but not for change for the sake of using technology for technology's sake. The true driver for the change needs to come from a pedagogic shift within the school to a more student centred approach to learning and teaching. As described by Harris et al. (2010, March) for teachers to better integrate technologies they need to "directly link students' content-related learning needs with particular content based learning activities and related educational technologies that will best support the activities' successful implementation" (p. 575). The technology makes this possible, however, it also requires teachers to be convinced that change is warranted in their classroom practices. Chua Reyes (2015) describes this as "the tug between entrenched practices and innovative approaches and the gulf between traditional mindsets and progressive thinking" (p. 5).

The eLI can also benefit greatly by joining professional learning communities where they can share their stories and learn from each other. In many ways, this is a much better approach to the concept of Professional Development. It is just in time learning, it is focused on the eLI's interest and it allows for the storied identities of the community members to inform each other's practices. By being in a like-minded community the eLI becomes much more informed about the

nuances related to their role and by also contributing it benefits the entire community.

Another implication for eLI's is that they may need to be the driver for changing the job descriptions of Library staff and Technical Support staff. Due to reasons already stated (see 9.1.2 Technology in the library), both these roles need to undergo significant change. As Maker Space areas become more common and computer processing, storage and software delivery moves more to the cloud, there is an opportunity for both of these groups within the school to play a more significant part in actively enabling the pedagogic change that is required to occur, rather than just watching it happen around them. The eLI should be able to identify areas of need within the school where extra support is required for ICT integration to occur.

10.7 Implications for School Executive

There was much discussion within the thesis about the role that the school executive played in either supporting or inadvertently devaluing the work done by the eLI. The study concluded that the executive needs to be visible in supporting the efforts of the eLI, by doing things like attending eLearning professional development sessions along with the rest of the staff. This is in line with what Robinson (2010) suggests in her model of instructional leadership which has been previously stated but is worth repeating and expanding here. According to her, exemplary executive support involves the "planning, evaluation, coordination and improvement of teaching and learning [and

includes] leading through promoting and participating in teacher learning and development (Robinson, 2010, p. 2).

The executive can also assist by making ICT an integral part of future planning of the school, as a tool for success of other initiatives – not in isolation. If the school has a five-year plan or something akin to that, then ICT needs to be put forward as part of the methodology that will bring about success.

The executive may also need to take some hard decisions. If pedagogic change is to take place and is required by the senior executive, then it needs to be encouraged and rewarded. There is no point training up staff on, for example, project-based learning if the staff are not required to follow through in the classroom. There needs to be an expectation that all staff commit to such change. The senior executive, especially those that are still practising in the classroom, need to embrace the pedagogic change themselves and become actively involved in implementing the pedagogic change as well as the inherent use of ICT within their own classroom practices and serve as role models for the other staff to follow.

The senior executive may also need to put some consideration into the role that the Library staff and Technical Support staff can play in assisting the eLI's. The work that Librarians do now, the move towards adding maker spaces and the relabelling of libraries as learning centres has resulted in increased use of digital technology within the library. The role is evolving and senior executive need to support this shift and provide training so that the librarians can also help

teachers incorporate ICT into their pedagogy. Likewise, the role of technical support staff has also evolved as this study has found with a growing move towards schools relying on outside support for the truly technical aspects of running a network. In that case, the technical staff should be redeployed as in the case of Sharon's school as technical assistants going in to the classroom to work with the students and teachers when technology is being used. Again, this is something that the Senior Executive need to consider as schools move forward and the demand for ICT increases.

10.8 Further Research

I hope that others interested in teacher integration of ICT into classroom practices read this study. I believe that they could use it as a basis for further study into why there still appears to be such a lag by many teachers to embrace the technology. I encourage others to look at the huge role that pedagogic change can play in accelerating this process. Teachers at schools where pedagogic practice is more traditional could use this study as a guide to begin to tackle the problem through the large number of administrative tasks that teachers have to perform. Still others might like to look at integration via development where ICT considerations become an intrinsic part of projects created, and a necessary tool for success in various styles of teaching and learning.

The model that I devised would benefit from further research. The context circles that Rosenberg and Koehler (2015) described as Macro, Meso and Micro contexts could be a useful addition to the SYSTPAaCK model to expand on the five external influences described as well as the three commonplaces that already exist within

the model. No doubt there is more need for further investigation into the contexts surrounding the TPACK framework. As this study has suggested, there is also scope for further research into the seven domains and the apparent fuzzy boundaries that exist between them (Archambault & Crippen, 2009). Technological Administrative Knowledge should be further explored as a useful domain to include in any framework as this study has shown. All four participants discussed both the necessity of TAK by teachers and the usefulness of it to spur teachers to incorporate ICT in their pedagogy.

10.9 Where to From Here?

When I drafted the chapters for this thesis, this chapter was called "what have I learnt". The plan was to provide a summary of what I can take away from this whole process and perhaps use to perform my role as an eLI or integrator more effectively. Now that I am at this stage of the process, I have come to realise that the preceding chapters serve as the best summary of what I have learnt. There are so many things to take away from listening to others' stories, becoming familiar with their identities and exploring what they have said that to summarise it in a few paragraphs would be an injustice and not a true reflection of what I have learnt. Similarly, the first half of this thesis which included the literature review, the investigation into narrative as a valid approach to conducting a study, which ultimately led to deciding on the methodological approach and the enquiry into the TPACK framework are also indicative of what I have learnt during this whole process. Suffice it to say that I present this thesis as an accurate record of what I have learnt.

As for what I plan to do with this knowledge, I'm not sure. I currently have a job as an integrator in an International School in Shanghai. Due to what I have focused on in this study, I have a firm conviction that in order for ICT to be integrated by teachers into teaching and learning there needs to be some sort of impetus for them to get to the Modification and Redefinition stages of the SAMR model. This is not to say that the other stages are less important or valid – they are all useful and all have an important part to play in ICT integration. To get to the Modification and Redefinition stages, changing pedagogical practices seems to be a valid approach. If we as educators believe that the current schooling model based from the industrial age is no longer serving the needs of society and our young in particular, then we need to look to some of the more contextually relevant approaches to teaching and learning. Such approaches need to put the student at the centre of the process, the teacher as a facilitator and technology as a tool which can be used by both to engage in the teaching and learning process as well as a mechanism for linking and delivering curriculum content.

I see the role of eLearning Integrator to be morphing already. My role is more and more becoming about providing opportunities for staff to engage in pedagogically based Professional Development rather than technically based. Through this approach, I get the necessary leverage to approach staff about ICT with authentic reasons. If they want to learn about the Flipped Classroom, Project Based Learning, Problem-a-day or Cultures of Thinking then they will need to be able to use the ICT as tools to allow them to achieve this. Similarly, if they want to provide continuous assessment, a differentiated curriculum and improved

parent/teacher or parent/school communications then again they will need to embrace the technology that can allow these things to occur more effectively.

I also see the role of technicians changing as we progress. As observed by the participants, in many schools now technicians are not needed. Devices are either very reliable or cannot be worked on by technicians like the old desktop machines used to be. Many schools outsource whole systems like the attendance, reporting and other administrative systems. As many of these are now online it has reduced the number of servers that the technicians need to administer. Cloud storage, cloud based software such as Google docs and Office 365 and much faster internet speeds means that the technician's workload has reduced in many places. Using their expertise in the classroom is a great use of an underutilized resource, but there is a need to ensure that the technician has the right type of personality to be able to do the job and act as an assistant to the teacher. Redefining the role of a librarian and library assistants may also provide eLI's with another source to call on for assistance in ICT integration. If their roles were to incorporate the notion that they need to be adaptive to suit the changing needs of the school, that may better define the role they are in.

10.10 Conclusion

This process has taken quite a few years now. I have spent many hours reading, many more hours writing, a large number of hours interviewing and observing and countless hours thinking about this thesis. As I write this conclusion, I am filled with the sort of emotion that one gets when they finish reading The Lord of the Rings or the Harry Potter series. I am glad that it is at its conclusion, but it

simply means that another door is opening to a world beyond thinking about this. I'm sure that for a while it will feel like a void that I will have to fill. I might go back to reading novels, or might start writing a blog again. What I do know is that I will be trying to apply what I have learnt in my role as it changes to suit the locations where I go and the people that I encounter. It is an unfinished personal narrative, but that is certainly much more enticing than the alternative. I wish my father, to whom this thesis is dedicated were alive to read it but he did not quite make it to the end. I am, however, very happy that my mother will be able to read it and my wife and children will have it forced upon them.

Whilst there have not been any earth shattering discoveries revealed by this thesis I do hope that it contributes in some small way to the sum of knowledge surrounding the use of ICT. I hope it has convinced the reader of the major role that pedagogy plays in ICT integration. If indeed we are to achieve the worthy goal of leading staff to incorporate ICT into their classroom practices, then we need to encourage practices that use technologies, not for their own sake, but rather to enhance teaching and learning.

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Appendix 1

Question Set - eLearning Integrators views, plans and theoretical underpinnings

The following questions will be asked of the eLearning Integrators with the view to get them to provide extended responses to the questions as a way of determining the philosophy/ies that they ascribe to in order to undertake their role and how they go about fulfilling their role within their institution.

These questions will form the basis of each of the case studies and are designed to provide starting points for discussion with the eLearning Integrator about their role and how they approach it, and determine their effectiveness.

1. How long have you been in your present role?
2. What do you consider to be the most important aspects of your role?
3. Do you base the methodology of how you undertake your role on any philosophy or set of philosophies?
4. How many staff do you interact with on a regular basis?
5. Can you describe a typical interaction with individual staff?
6. Can you describe a typical interaction with staff in a group setting?
7. Who do you liaise with in regard to your role within your institution (so you know what to do – what direction to take)?
8. Who do you liaise with outside of your institution with regard to your role?

9. Can you describe the short, medium and long term plan you have for eLearning within your institution?
10. What support structures are in place for you?
11. What hindrances are there to you doing your role at your institution?
12. What do you see as the major challenges you face on a daily basis?
13. What do you see as the major challenges you face moving forward in your role?
14. Could you summarize what you actually do on a daily / weekly basis?
15. How has your role changed since you have been doing it?
16. What successes have you had?
17. How do you determine your effectiveness in your job?
18. How do you determine what to do next?
19. What do you offer in the way of professional development?